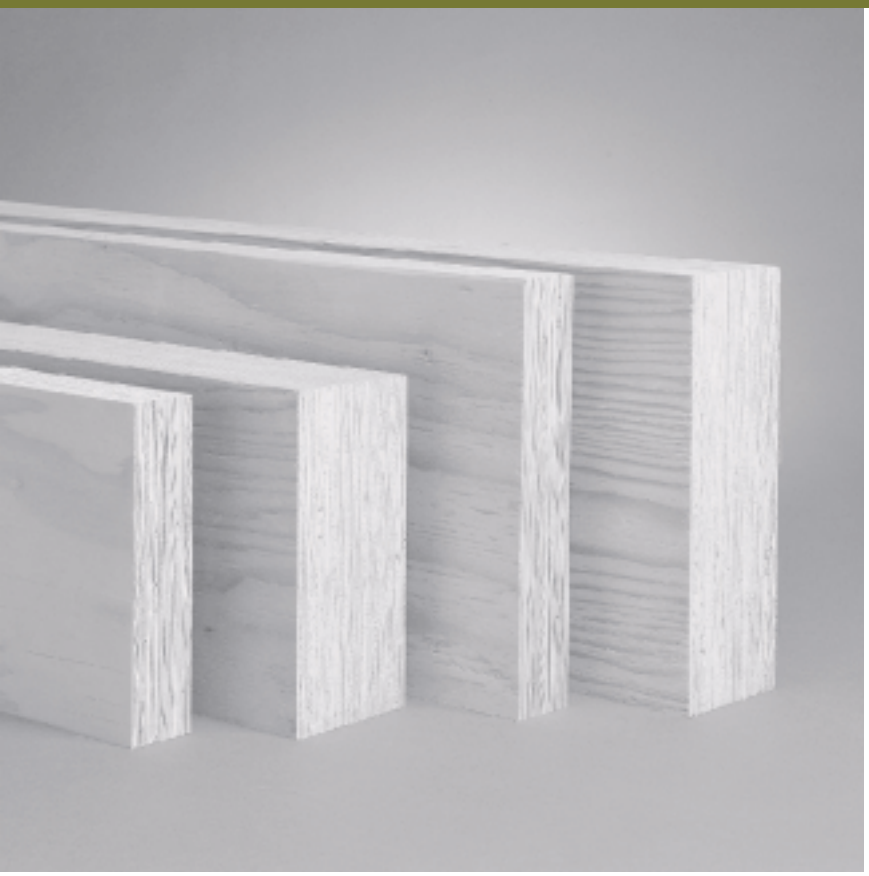

LP LVL 2950F_b-2.0E 2650F_b-1.9E 2400F_b-1.7E 2250F_b-1.5E Technical Guide

Limit States Design

LP® LVL

Designed to Outperform Traditional Lumber

LP's laminated veneer lumber (LVL) is a vast improvement over solid wood beams. Problems that naturally occur as solid sawn lumber dries—twisting, splitting, checking, crowning and warping—are greatly reduced. And pound for pound, LP LVL has more load-carrying capacity than solid sawn lumber. The end result: a building material that is more reliable, high-performing and usable than traditional lumber. And unlike anything available with traditional commodity products, LP LVL is backed by a limited lifetime warranty.

The Strength is in the Engineering

LP LVL is made from ultrasonically and visually graded veneers arranged in a specific pattern so that naturally occurring defects have no concentrated effect on the beam's performance. The veneers are then bonded with waterproof adhesives under pressure and heat. LP LVL beams are exceptionally strong, solid and straight, making them excellent for most primary load-carrying beam applications. And, unlike traditional solid sawn beams, LP LVL is available in custom lengths and widths.

LP LVL: Available in Four Grades

LP LVL is available in four grades: 2950F_b-2.0E, 2650F_b-1.9E, 2400F_b-1.7E and 2250F_b-1.5E. It comes in a wide variety of thicknesses and depths, and lengths of up to 60 feet. In addition to the standard natural finish, a water-resistant coating called SiteCote™ is available for extra weather protection during construction. Some grades are available in factory-laminated widths (known as "billet beam") to eliminate the need for field nailing and/or bolting of multiple plies.

Software for Easy, Reliable Design

Our design/specification software enhances your in-house design capabilities. It offers accurate designs for a wide variety of applications with interfaces for printed output or plotted drawings. Through our distributors, we offer component design review services for designs using LP Engineered Wood Products.

Code Evaluation

LP LVL has been evaluated by the Canadian Construction Materials Centre (CCMC) to comply with the intent of the National Building Code of Canada (NBC). For the most current CCMC evaluation report contact your LP Engineered Wood Products distributor or visit www.lpcorp.com.

Contents

Handling, Storage & Usage Guidelines 3-4

2950F_b-2.0E

Product Specifications & Design Values 5
Floor Beam Quick Reference Tables 6
Combined Header Quick Reference Tables 7
Roof Header Quick Reference Tables 8
Uniform Floor Load (PLF) Resistance 9
Uniform Roof Load (PLF) Resistance 10

2650F_b-1.9E

Product Specifications & Design Values 11
Floor Beam Quick Reference Tables 12
Combined Header Quick Reference Tables 13
Roof Header Quick Reference Tables 14
Uniform Floor Load (PLF) Resistance 15
Uniform Roof Load (PLF) Resistance 16

2400F_b-1.7E

Product Specifications & Design Values 17
Floor Beam Quick Reference Tables 18
Combined Header Quick Reference Tables 19
Roof Header Quick Reference Tables 20
Uniform Floor Load (PLF) Resistance 21
Uniform Roof Load (PLF) Resistance 22

2250F_b-1.5E

Product Specifications & Design Values 23
Floor Beam Quick Reference Tables 24
Combined Header Quick Reference Tables 25
Roof Header Quick Reference Tables 26
Uniform Floor Load (PLF) Resistance 27
Uniform Roof Load (PLF) Resistance 28

Typical Roof & Flooring Applications 29
Installation Details 30
Connection of Multiple Ply Beams 31
LP I-Joists 32
Depend on LP 33
Warranty 34

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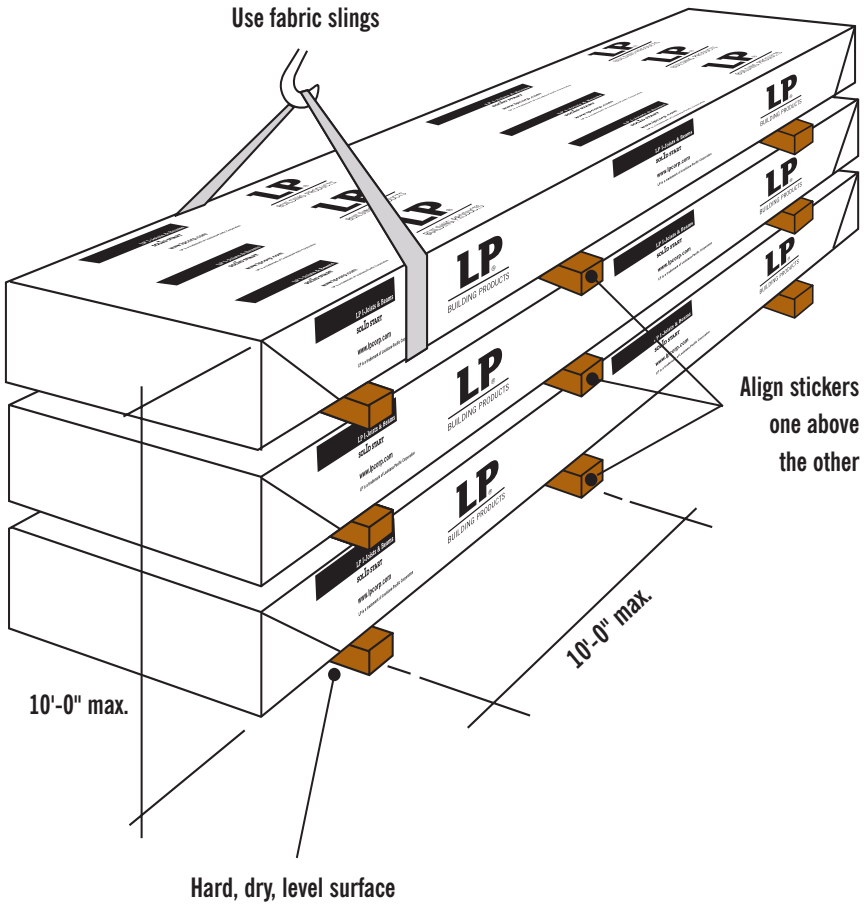
Handling & Storage Guidelines

- Warning: Failure to follow good procedures for handling, storage and installation could result in unsatisfactory performance, unsafe structures and possible collapse.
- Keep LP LVL dry. These products are intended to resist the effects of moisture on structural performance from normal construction delays but are not intended for permanent exposure to the weather.
- Unload products carefully, by lifting. Support the bundles to reduce excessive bowing. Individual products should be handled in a manner which prevents physical damage during measuring, cutting, erection, etc.
- Keep products stored in wrapped and strapped bundles, stacked no more than 10' high. Support and separate bundles with 2x4 (or larger) stickers spaced no more than 10' apart. Keep stickers in line vertically.
- Product must not be stored in contact with the ground, or have prolonged exposure to the weather.
- Use forklifts and cranes carefully to avoid damaging product.
- Do not use a visually damaged product. Call your local LP Engineered Wood Products distributor for assistance when damaged products are encountered.
- For satisfactory performance, LP LVL must be used under dry, well-ventilated conditions.
- Check that LVL plies are dry before nailing or bolting together to avoid trapped moisture.
- Do not use LP LVL for other purposes, such as ramps, planks, etc.



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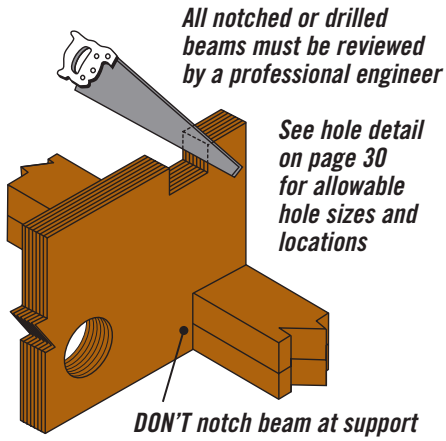
WARNING

The following condition is NOT permitted!

DO NOT USE VISUALLY DAMAGED PRODUCTS WITHOUT FIRST CHECKING WITH YOUR LOCAL LP ENGINEERED WOOD PRODUCTS DISTRIBUTOR OR SALES OFFICE (SEE BACK COVER FOR DETAILS).



IMPORTANT NOTES

1. This guide is valid only for LP LVL beams supporting loads applied parallel to the glue lines ("edge" orientation).
2. Make sure that the design loads, duration of load increases and deflection limits that you choose from this brochure are appropriate for your application and comply with code requirements in the area where the product is to be used.
3. If you do not know the correct design criteria and all the loads imposed on the component from all parts of the structure, seek qualified help from the architect, engineer or designer of the structure.
4. Additional reference data on wood construction is available in the form of building codes, code evaluation reports and other design references.
5. LP LVL beams shall be used under dry, well ventilated and covered conditions. Dry conditions are product installation conditions where ambient moisture content is 16% or less.
6. LP LVL beams are not cambered.
7. The tables and design values listed in this guide require continuous lateral restraint of the compression edge of LVL beams. Continuous restraint is defined as a maximum unbraced length of 24". This restraint is normally provided by sheathing and/or framing members, which must be adequately anchored to the beam and the supporting structure. Framing conditions that do not provide continuous lateral restraint require special design. Contact your LP Engineered Wood Products distributor.
   Caution: Failure to provide adequate lateral restraint could result in unstable beams and reduced load capacity.
8. Lateral restraint must also be provided at bearings or supports to prevent beams from rotating or twisting.
9. Beam spans are measured from center-to-center of supports. A structurally adequate bearing surface under the full width (thickness) of the beam must be provided at each support.
10. Minimum bearing length is 1-1/2" (at least one jack stud or cripple is required). Refer to bearing chart and notes for quick reference tables. Additionally, verify local code requirements concerning minimum bearing.
11. Refer to Connection of Multiple Ply Beams for appropriate multi-ply connections.
12. For nails installed on top or bottom edge of beam: closest on-center nail spacing per row is 3" for 8d (2-1/2") common nails and 4" for 10d (3") common nails.
13. Tables in this brochure are for simple (single) span beams as noted, and for continuous (multiple) equal span beams as noted.
14. Tables in this brochure are for uniform (evenly distributed) loads along the length of the beam.
15. For other conditions such as concentrated loads, unequal spans, etc., contact your LP Engineered Wood Products distributor.
16. Total load deflections are based on instantaneous loadings.
17. Equal or better grades of LP LVL can be substituted for the indicated grade.

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DESIGN VALUES (SPECIFIED STRENGTHS – PSI)

Grade	BENDING F_b *	MOE (x 10^6)	COMPRESSION F_c (parallel to grain)	COMPRESSION F_{cp} (perpendicular to grain)	SHEAR F_v
2950F_b-2.0E	5452	2.0	5107	1365	540

NOTES:
* F_b is for 12" depth (d).
For depths greater than 12", adjust F_b by $(12/d)^{1/7}$.
For depths less than 12", adjust F_b by $(12/d)^{1/9}$.
For depths less than 5-1/2", adjust F_b by 1.09.

The values above are for standard term load duration. Bending (F_b), Compression Parallel-to-Grain (F_c) and Shear (F_v) may be adjusted according to code. MOE (E) and Compression Perpendicular-to-Grain (F_{cp}) shall NOT be adjusted.

SECTION PROPERTIES AND FACTORED RESISTANCES

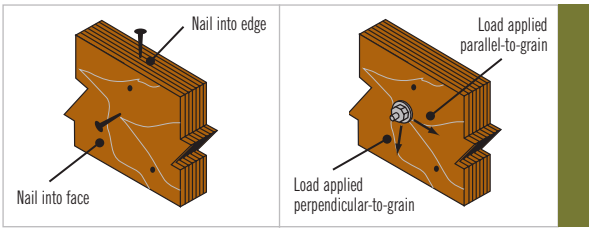
Depth	Weight (lb/ft)				Factored Moment Resistance (lb-ft)				Factored Shear Resistance (lb)				Moment of Inertia (in^4)			
	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"
7-1/4"	3.6	7.3	10.9	14.5	6630	13259	19889	26519	4111	8222	12332	16443	56	111	167	222
9-1/4"	4.6	9.3	13.9	18.5	10504	21008	31511	42015	5245	10490	15734	20979	115	231	346	462
9-1/2"	4.8	9.5	14.3	19.0	11046	22093	33139	44186	5387	10773	16160	21546	125	250	375	500
11-1/4"	5.6	11.3	16.9	22.5	15203	30406	45608	60811	6379	12758	19136	25515	208	415	623	831
11-7/8"	5.9	11.9	17.8	23.8	16837	33675	50512	67350	6733	13466	20199	26933	244	488	733	977
14"	7.0	14.0	21.0	28.0	22866	45733	68599	91465	7938	15876	23814	31752	400	800	1201	1601
16"	8.0	16.0	24.0	32.0	29302	58604	87906	117208	9072	18144	27216	36288	597	1195	1792	2389
18"	9.0	18.0	27.0	36.1	36466	72933	109399	145866	10206	20412	30618	40824	851	1701	2552	3402

MODIFICATION FACTORS:

The Factored Moment (M) and Factored Shear (V) Resistances above are for standard term load duration and may be adjusted according to code.

FASTENER VALUES:

Refer to the current CCMC evaluation report, CCMC 11518-R, for information on the equivalent specific gravity for design of nail and bolt connections. CCMC evaluation reports can be obtained online at www.irc.nrc-cnrc.gc.ca/ccmc.



BEARING LENGTH AND MAXIMUM REACTION CHART

How to use bearing charts:

1. Determine the thickness required for the LP LVL beam and calculate the factored reaction.
2. Select the appropriate table for 1-ply (1-3/4"), 2-ply (3-1/2"), 3-ply (5-1/4") or 4-ply (7").
3. Select a bearing length with a factored reaction that meets or exceeds your calculated value.
4. Make sure the support is structurally adequate to carry the reaction.

Example: 3-1/2" LP LVL with a factored reaction of 14,200 lbs.

Solution: Select a 4" bearing length with a factored resistance of 15,280 lbs.

FACTORED REACTION RESISTANCE (LBS)

Width	Bearing Length (in)																					
	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6	6-1/2	7	7-1/2	8	8-1/2	9	9-1/2	10	10-1/2	11	11-1/2	12
1-3/4"	2860	3820	4770	5730	6680	7640	8590	9550	10510	11460	12420	13370	14330	15280	16240	17190	18150	19110	20060	21020	21970	22930
3-1/2"	5730	7640	9550	11460	13370	15280	17190	19110	21020	22930	24840	26750	28660	30570	32480	34390	36300	38220	40130	42040	43950	45860
5-1/4"	8590	11460	14330	17190	20060	22930	25790	28660	31530	34390	37260	40130	42990	45860	48730	51590	54460	57330	60190	63060	65920	68790
7"	11460	15280	19110	22930	26750	30570	34390	38220	42040	45860	49680	53500	57330	61150	64970	68790	72610	76440	80260	84080	87900	91720

NOTES:
1. Tabulated values are based on the factored compression resistance, perpendicular-to-grain, of the LVL. This is suitable for beams bearing on steel or the end-grain of studs.
2. Verify that the support for the beam is structurally adequate to carry the reaction. The compressive resistance, parallel-to-grain, of studs may require more studs than the bearing length above indicates.
3. For beams bearing on wood plates, the required bearing length will increase based on the bearing resistance (compression perpendicular-to-grain) of the species and grade used for the plate material.
4. Verify local code requirements concerning minimum bearing.

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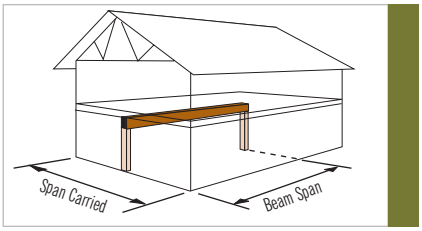
To use these charts:

1. Select the correct table for the beam application you need.
2. Choose the required beam span in the left column.
3. Select the span carried on the top line.
4. Read the beam size or choice of beam sizes from table.

Example: A beam with an 18' span carries 15' simple span joists on each side.

Solution: Using the SIMPLE SPAN JOISTS table below for an 18' beam span supporting a 30' span carried, select either the 3-1/2" x 16" or 5-1/4" x 14" beam.

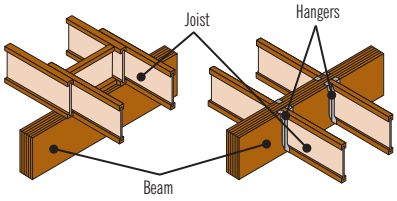


SIMPLE SPAN JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"
16	3-1/2"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
18	3-1/2"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"	18"
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
20	3-1/2"	16"	16"	18"	18"	18"	18"	18"	18"	18"	**18"**	-
	5-1/4"	14"	14"	16"	16"	16"	16"	16"	16"	16"	16"	16"

For floor joists that are NOT continuous over the beam:

- Floor joist either lap or butt on top of beam, or frame into beam with hangers.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



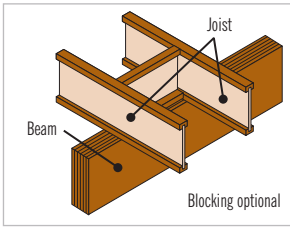
Blocking or other approved method of restraint required

CONTINUOUS JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"	14"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
16	3-1/2"	14"	14"	14"	16"	16"	16"	16"	16"	16"	**16"**	**16"**
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"	14"
18	3-1/2"	16"	16"	16"	16"	18"	18"	**18"**	**18"**	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
20	3-1/2"	18"	18"	18"	18"	18"	**18"**	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	16"	16"	18"	18"	18"	18"

For floor joists that are continuous over the beam:

- Floor joist spans are approximately equal on each side of beam.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



GENERAL NOTES:

1. These tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. All loads listed are the specified (unfactored) loads at standard duration.
3. Floor live loads have been reduced in accordance with 4.1.6.9(3) of the 1995 NBC.
4. Floor beam deflections are limited to L/360 for live load and L/240 for total load.
   Roof beam deflections are limited to L/360 for live load and L/180 for total load.
5. Beam Span is center-to-center of supports.
6. Beam Width can be either a single piece of LVL or built up from individual plies of LVL that are nailed and/or bolted together.
   Refer to page 31 for connection details.
7. If the value is "-", then the depth required exceeds the scope of this guide.

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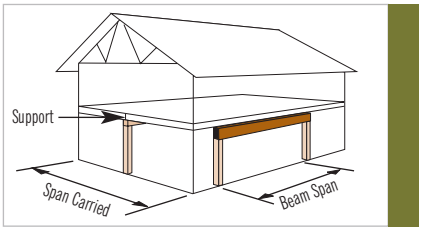
For combined roof and floor loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- Tables include a specified dead load of 100 plf for the second floor wall.
- Interior support at mid-span of the floor system is required.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
16	3-1/2"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/2"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
	5-1/4"	9-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	16"	16"	16"	16"	18"	**18"**	**18"**	**18"**	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	9-1/2"	11-1/4"	11-1/4"
12	3-1/2"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	16"	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"
14	3-1/2"	14"	14"	14"	16"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**
	5-1/4"	1-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	16"	18"	18"	**18"**	**18"**	-	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	16"

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	14"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	**16"**	**16"**	**18"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
14	3-1/2"	14"	16"	16"	16"	16"	**16"**	**18"**	**18"**	**18"**	-	-
	5-1/4"	14	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
16	3-1/2"	16"	18"	18"	**18"**	**18"**	-	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"	**18"**

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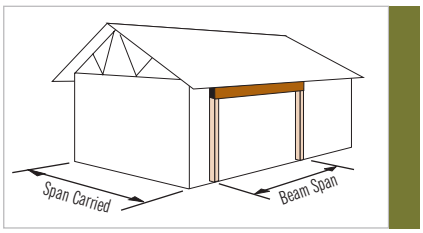
For roof loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
12	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
14	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"
16	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
18	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
14	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
16	3-1/2"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
18	3-1/2"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"	18"
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
16	3-1/2"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"
18	3-1/2"	16"	16"	16"	16"	18"	18"	18"	18"	18"	18"	-
	5-1/4"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	16"	16"	16"	16"	18"	18"	18"	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"
18	3-1/2"	16"	18"	18"	18"	18"	18"	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	18"	18"	18"	18"

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LP LVL 2950F$_b$-2.0E
Uniform Floor Load (PLF) Resistance

To use:

1. Choose the required beam span in the left column.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/240 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For a 16' beam span, select a 2- and 3-ply beam that satisfies an L/480 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 16"

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 14"

Span (ft)	1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
6	571	762	1139	1302	1187	1583		1754	1286	1715		1814	2136			2260	6
7	360	480	716	1077	747	997		1449	810	1080		1497	1345	1793		1848	7
8	241	321	478	824	500	667	997	1234	542	723	1080	1274	901	1201		1563	8
9	169	225	335	650	351	469	699	1031	381	508	757	1085	632	843	1260	1353	9
10	123	164	243	525	256	341	508	834	277	370	550	877	461	615	917	1193	10
11	92	123	181	433	192	256	380	688	208	278	412	724	346	462	687	998	11
12	71	95	139	363	148	197	292	577	160	214	316	607	267	356	528	837	12
13	56	74	108	309	116	155	228	491	126	168	248	516	210	280	414	712	13
14	45	60	86	266	93	124	182	422	101	135	197	444	168	224	330	613	14
15	36	48	69	231	75	101	147	367	82	109	159	386	136	182	267	533	15
16	30	40	56	202	62	83	120	322	67	90	130	339	112	150	219	468	16
17	-	-	-	-	52	69	99	284	56	75	108	299	93	125	182	413	17
18	-	-	-	-	43	58	83	253	47	63	90	266	79	105	152	368	18
19	-	-	-	-	37	49	70	226	40	54	76	238	67	89	128	329	19
20	-	-	-	-	32	42	59	204	34	46	64	214	57	76	109	297	20
21	-	-	-	-	-	-	-	-	30	40	55	194	49	66	94	268	21
22	-	-	-	-	-	-	-	-	-	-	-	-	43	57	81	244	22

Span (ft)	1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				1-3/4" x 18"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
10	542	723	1079	1272	889	1185		1552	1327	1769		1835	1890			2137	10
11	407	543	809	1105	668	890	1329	1381	997	1329		1627	1419			1887	11
12	314	418	622	927	514	686	1022	1244	768	1024		1461	1093	1458		1689	12
13	247	329	488	789	404	539	802	1073	604	805	1200	1325	860	1147		1529	13
14	197	263	389	679	324	432	641	924	483	644	959	1185	688	918	1368	1396	14
15	160	214	315	591	263	351	519	804	393	524	778	1031	560	746	1110	1284	15
16	132	176	259	518	217	289	427	705	324	432	640	905	461	615	913	1128	16
17	110	147	214	458	181	241	354	624	270	360	532	801	384	512	760	998	17
18	93	124	180	408	152	203	297	555	227	303	447	713	324	432	639	889	18
19	79	105	152	365	129	172	252	497	193	258	379	639	275	367	542	796	19
20	67	90	129	329	111	148	215	448	165	221	323	576	236	315	463	718	20
21	58	78	111	298	96	128	185	406	143	191	278	521	204	272	399	650	21
22	50	67	95	270	83	111	160	369	124	166	241	474	177	236	345	591	22
23	44	59	83	247	73	97	139	337	109	145	210	433	155	207	301	540	23
24	39	52	72	226	64	85	121	308	96	128	184	396	136	182	264	495	24
25	34	46	63	208	56	75	106	283	84	113	161	365	120	161	232	455	25
26	30	41	55	191	50	67	94	261	75	100	143	336	107	143	206	420	26
27	-	-	-	-	45	60	83	242	67	89	126	311	96	128	183	388	27
28	-	-	-	-	40	54	74	224	60	80	112	288	86	114	163	360	28
29	-	-	-	-	36	48	65	208	54	72	100	268	77	103	145	335	29
30	-	-	-	-	32	43	58	194	49	65	90	250	70	93	130	312	30

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/240 Deflection Resistance, AND the appropriate Live Load column, either the L/480 or L/360 deflection limit. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/240 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 4.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

ACTUAL DEFLECTION BASED ON SPAN AND LIMIT

Span (ft)	L/480	L/360	L/240
10	1/4"	5/16"	1/2"
12	5/16"	3/8"	5/8"
14	3/8"	7/16"	11/16"
16	3/8"	9/16"	13/16"
18	7/16"	5/8"	7/8"
20	1/2"	11/16"	1"
22	9/16"	3/4"	1-1/8"
24	5/8"	13/16"	1-3/16"
26	5/8"	7/8"	1-5/16"
28	11/16"	15/16"	1-3/8"
30	3/4"	1"	1-1/2"

* Deflections rounded to the nearest 1/16".

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To use:

1. Choose the required beam span in the left column. For beams with a pitch greater than 1:12, multiply the horizontal beam span by the slope adjustment factor from the table below.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/180 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For an 18' horizontal span with a pitch of 4:12, select a 2- and 3-ply beam that satisfies an L/360 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE BEAM SPAN: 18' * 1.054 = 18.97' Use 19'

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 16"

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 14"

Span (ft)	1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
6	762	1143		1302	1583			1754	1715			1814				2260	6
7	480	720	956	1077	997			1449	1080			1497	1793			1848	7
8	321	482	639	824	667	1001		1234	723	1085		1274	1201			1563	8
9	225	338	448	650	469	703	933	1031	508	762	1011	1085	843	1265		1353	9
10	164	246	325	525	341	512	679	834	370	555	736	877	615	922		1193	10
11	123	185	243	433	256	385	509	688	278	417	551	724	462	693	918	998	11
12	95	142	186	363	197	296	391	577	214	321	424	607	356	534	706	837	12
13	74	112	146	309	155	233	306	491	168	252	332	516	280	420	554	712	13
14	60	90	116	266	124	186	244	422	135	202	265	444	224	336	442	613	14
15	48	73	93	231	101	151	198	367	109	164	214	386	182	273	358	533	15
16	40	60	76	202	83	125	162	322	90	135	176	339	150	225	294	468	16
17	33	50	63	178	69	104	134	284	75	113	146	299	125	187	244	413	17
18	-	-	-	-	58	87	112	253	63	95	122	266	105	158	205	368	18
19	-	-	-	-	49	74	95	226	54	81	103	238	89	134	173	329	19
20	-	-	-	-	42	64	80	204	46	69	87	214	76	115	148	297	20
21	-	-	-	-	36	55	69	184	40	60	75	194	66	99	127	268	21
22	-	-	-	-	32	48	59	167	34	52	64	176	57	86	109	244	22

Span (ft)	1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				1-3/4" x 18"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
10	723	1085		1272	1185			1552	1769			1835				2137	10
11	543	815	1081	1105	890	1336		1381	1329			1627				1887	11
12	418	628	831	927	686	1029		1244	1024			1461	1458			1689	12
13	329	494	652	789	539	809	1072	1073	805	1208		1325	1147			1529	13
14	263	395	521	679	432	648	857	924	644	967		1185	918	1377		1396	14
15	214	321	422	591	351	526	695	804	524	786		1031	746	1120		1284	15
16	176	264	347	518	289	434	571	705	432	648	856	905	615	922		1128	16
17	147	220	288	458	241	362	475	624	360	540	712	801	512	769		998	17
18	124	186	242	408	203	304	399	555	303	455	598	713	432	648	855	889	18
19	105	158	205	365	172	259	338	497	258	387	508	639	367	551	725	796	19
20	90	135	174	329	148	222	289	448	221	331	434	576	315	472	620	718	20
21	78	117	150	298	128	192	249	406	191	286	374	521	272	408	535	650	21
22	67	101	129	270	111	167	215	369	166	249	324	474	236	354	464	591	22
23	59	89	112	247	97	146	187	337	145	218	282	433	207	310	405	540	23
24	52	78	98	226	85	128	164	308	128	192	248	396	182	273	355	495	24
25	46	69	86	208	75	113	144	283	113	169	218	365	161	241	313	455	25
26	41	61	76	191	67	101	127	261	100	151	193	336	143	215	277	420	26
27	36	55	67	177	60	90	113	242	89	134	171	311	128	192	247	388	27
28	32	49	59	164	54	81	101	224	80	120	153	288	114	172	220	360	28
29	-	-	-	-	48	72	90	208	72	108	137	268	103	154	197	335	29
30	-	-	-	-	43	65	80	194	65	98	123	250	93	140	177	312	30

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions. For beams with a pitch greater than 1:12, the horizontal beam span must be multiplied by the factor from the SLOPE ADJUSTMENT table.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/180 Deflection Resistance, AND the appropriate Live Load column, either the L/360 or L/240 deflection limit. To design for a Live Load deflection of L/480, use the appropriate column from the Uniform Floor Load tables on page 8. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/180 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 4.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

SLOPE ADJUSTMENT

Slope	Factor
2:12	1.014
3:12	1.031
4:12	1.054
5:12	1.083
6:12	1.118
7:12	1.158
8:12	1.202
9:12	1.250
10:12	1.302
11:12	1.357
12:12	1.414

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DESIGN VALUES (SPECIFIED STRENGTHS – PSI)

Grade	BENDING F_b *	MOE (x 10^6)	COMPRESSION F_c (parallel to grain)	COMPRESSION F_{cp} (perpendicular to grain)	SHEAR F_v
2650F_b-1.9E	4897	1.9	3751	1365	530

NOTES:
* F_b is for 12" depth (d).
For depths greater than 12", adjust F_b by $(12/d)^{1/7}$.
For depths less than 12", adjust F_b by $(12/d)^{1/9}$.
For depths less than 5-1/2", adjust F_b by 1.09.

The values above are for standard term load duration. Bending (F_b), Compression Parallel-to-Grain (F_c) and Shear (F_v) may be adjusted according to code. MOE (E) and Compression Perpendicular-to-Grain (F_{cp}) shall NOT be adjusted.

SECTION PROPERTIES AND FACTORED RESISTANCES

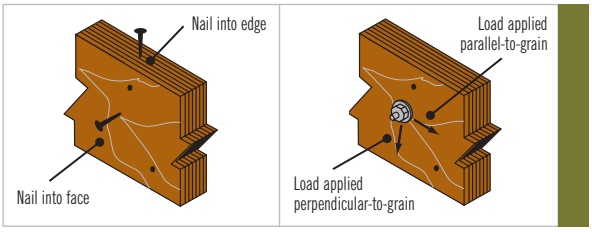
Depth	Weight (lb/ft)				Factored Moment Resistance (lb-ft)				Factored Shear Resistance (lb)				Moment of Inertia (in^4)			
	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"
7-1/4"	3.6	7.3	10.9	14.5	5955	11910	17865	23819	4035	8069	12104	16139	56	111	167	222
9-1/4"	4.6	9.3	13.9	18.5	9435	18869	28304	37738	5148	10295	15443	20591	115	231	346	462
9-1/2"	4.8	9.5	14.3	19.0	9922	19844	29766	39688	5287	10574	15860	21147	125	250	375	500
11-1/4"	5.6	11.3	16.9	22.5	13655	27310	40966	54621	6261	12521	18782	25043	208	415	623	831
11-7/8"	5.9	11.9	17.8	23.8	15123	30247	45370	60494	6608	13217	19825	26434	244	488	733	977
14"	7.0	14.0	21.0	28.0	20539	41077	61616	82154	7791	15582	23373	31164	400	800	1201	1601
16"	8.0	16.0	24.0	32.0	26319	52638	78957	105276	8904	17808	26712	35616	597	1195	1792	2389
18"	9.0	18.0	27.0	36.1	32754	65508	98263	131017	10017	20034	30051	40068	851	1701	2552	3402

MODIFICATION FACTORS:

The Factored Moment (M) and Factored Shear (V) Resistances above are for standard term load duration and may be adjusted according to code.

FASTENER VALUES:

Refer to the current CCMC evaluation report, CCMC 11518-R, for information on the equivalent specific gravity for design of nail and bolt connections. CCMC evaluation reports can be obtained online at www.irc.nrc-cnrc.gc.ca/ccmc.



BEARING LENGTH AND MAXIMUM REACTION CHART

How to use bearing charts:

1. Determine the thickness required for the LP LVL beam and calculate the factored reaction.
2. Select the appropriate table for 1-ply (1-3/4"), 2-ply (3-1/2"), 3-ply (5-1/4") or 4-ply (7").
3. Select a bearing length with a factored reaction that meets or exceeds your calculated value.
4. Make sure the support is structurally adequate to carry the reaction.

Example: 3-1/2" LP LVL with a factored reaction of 14,200 lbs.

Solution: Select a 4" bearing length with a factored resistance of 15,280 lbs.

FACTORED REACTION RESISTANCE (LBS)

Width	Bearing Length (in)																					
	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6	6-1/2	7	7-1/2	8	8-1/2	9	9-1/2	10	10-1/2	11	11-1/2	12
1-3/4"	2860	3820	4770	5730	6680	7640	8590	9550	10510	11460	12420	13370	14330	15280	16240	17190	18150	19110	20060	21020	21970	22930
3-1/2"	5730	7640	9550	11460	13370	15280	17190	19110	21020	22930	24840	26750	28660	30570	32480	34390	36300	38220	40130	42040	43950	45860
5-1/4"	8590	11460	14330	17190	20060	22930	25790	28660	31530	34390	37260	40130	42990	45860	48730	51590	54460	57330	60190	63060	65920	68790
7"	11460	15280	19110	22930	26750	30570	34390	38220	42040	45860	49680	53500	57330	61150	64970	68790	72610	76440	80260	84080	87900	91720

NOTES:
1. Tabulated values are based on the factored compression resistance, perpendicular-to-grain, of the LVL. This is suitable for beams bearing on steel or the end-grain of studs.
2. Verify that the support for the beam is structurally adequate to carry the reaction. The compressive resistance, parallel-to-grain, of studs may require more studs than the bearing length above indicates.
3. For beams bearing on wood plates, the required bearing length will increase based on the bearing resistance (compression perpendicular-to-grain) of the species and grade used for the plate material.
4. Verify local code requirements concerning minimum bearing.

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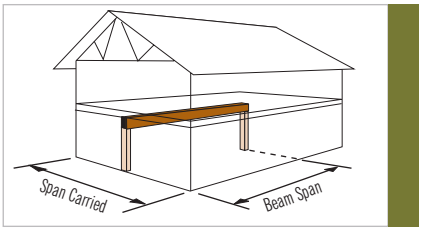
To use these charts:

1. Select the correct table for the beam application you need.
2. Choose the required beam span in the left column.
3. Select the span carried on the top line.
4. Read the beam size or choice of beam sizes from table.

Example: A beam with an 18' span carries 15' simple span joists on each side.

Solution: Using the SIMPLE SPAN JOISTS table below for an 18' beam span supporting a 30' span carried, select either the 3-1/2" x 16" or 5-1/4" x 14" beam.

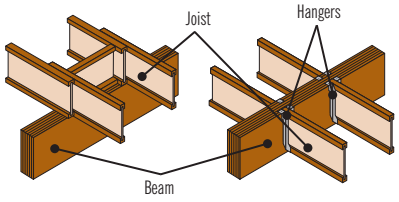


SIMPLE SPAN JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	**11-7/8"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	**14"**	**14"**	**14"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
16	3-1/2"	14"	14"	14"	14"	16"	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
18	3-1/2"	16"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"
20	3-1/2"	16"	18"	**18"**	**18"**	**18"**	**18"**	**18"**	**18"**	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	16"	16"	16"	18"

For floor joists that are NOT continuous over the beam:

- Floor joist either lap or butt on top of beam, or frame into beam with hangers.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



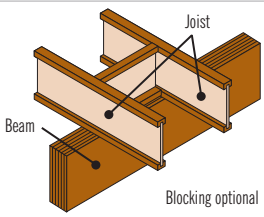
Blocking or other approved method of restraint required

CONTINUOUS JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	**11-1/4"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	**11-7/8"**	**14"**	**14"**	**14"**	**14"**
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	14"	14"	14"	14"	**14"**	**14"**	**14"**	**14"**	**14"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"
16	3-1/2"	14"	14"	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**	**18"**
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"	14"
18	3-1/2"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**	**18"**	**18"**	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	**16"**	**16"**
20	3-1/2"	**18"**	**18"**	**18"**	**18"**	**18"**	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	16"	18"	**18"**	**18"**	**18"**	**18"**

For floor joists that are continuous over the beam:

- Floor joist spans are approximately equal on each side of beam.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



GENERAL NOTES:

1. These tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. All loads listed are the specified (unfactored) loads at standard duration.
3. Floor live loads have been reduced in accordance with 4.1.6.9(3) of the 1995 NBC.
4. Floor beam deflections are limited to L/360 for live load and L/240 for total load.
   Roof beam deflections are limited to L/360 for live load and L/180 for total load.
5. Beam Span is center-to-center of supports.
6. Beam Width can be either a single piece of LVL or built up from individual plies of LVL that are nailed and/or bolted together.
   Refer to page 31 for connection details.
7. If the value is "-", then the depth required exceeds the scope of this guide.

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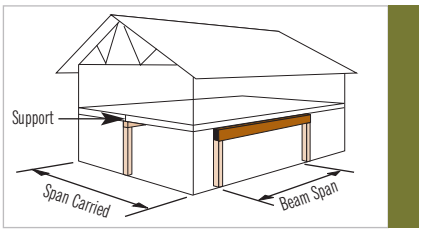
For combined roof and floor loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- Tables include a specified dead load of 100 plf for the second floor wall.
- Interior support at mid-span of the floor system is required.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	**14"**
	5-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	14"	14"	14"	14"	14"	14"	14"	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
16	3-1/2"	14"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	**11-7/8"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	**14"**	**14"**	**14"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	**16"**	**16"**	**16"**	**16"**	**16"**	**18"**	**18"**
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	**14"**	**14"**

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	**14"**	**14"**	**14"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	11-7/8"	11-7/8"	14"	14"	**14"**	**14"**	**14"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"
14	3-1/2"	14"	14"	**16"**	**16"**	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	**16"**	**16"**
16	3-1/2"	**16"**	**16"**	**18"**	**18"**	**18"**	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	**18"**	**18"**

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	**11-1/4"**
	5-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	**11-7/8"**	**14"**	**14"**	**14"**	**14"**	**14"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	14"	14"	14"	**14"**	**14"**	**16"**	**16"**	**16"**	**16"**	**16"**	**18"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	**14"**
14	3-1/2"	**14"**	**16"**	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	**16"**	**16"**	**16"**	**16"**
16	3-1/2"	**18"**	**18"**	**18"**	-	-	-	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**

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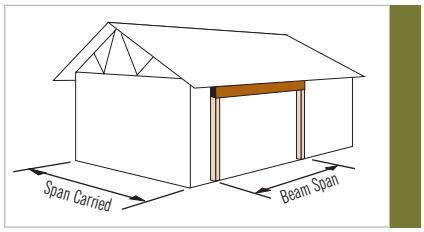
For roof loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
12	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	9-1/2"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
14	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"
16	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"
18	3-1/2"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"
14	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"
16	3-1/2"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
18	3-1/2"	14"	16"	16"	16"	16"	16"	16"	16"	**18"**	**18"**	**18"**
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	**16"**	**16"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"
16	3-1/2"	14"	14"	16"	16"	16"	16"	16"	**16"**	**16"**	**18"**	**18"**
	5-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"
18	3-1/2"	16"	16"	16"	18"	18"	**18"**	**18"**	**18"**	**18"**	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	18"

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
8	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	**14"**	**14"**
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	14"	16"	**16"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	16"	16"	**16"**	**18"**	**18"**	**18"**	**18"**	**18"**	-
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
18	3-1/2"	18"	18"	**18"**	**18"**	**18"**	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	16"	16"	18"	18"	18"	**18"**	**18"**

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LP LVL 2650F$_b$-1.9E
Uniform Floor Load (PLF) Resistance

To use:

1. Choose the required beam span in the left column.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/240 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For a 16' beam span, select a 2- and 3-ply beam that satisfies an L/480 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 16"

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 14"

Span (ft)	1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
6	543	724	1082	1277	1128	1504		1722	1222	1629		1781	2029			2218	6
7	342	456	680	967	710	947	1416	1422	769	1026		1469	1278	1704		1814	7
8	229	305	454	739	475	634	947	1173	515	687	1026	1234	856	1141		1534	8
9	160	214	318	583	334	445	663	926	362	482	719	974	601	801	1196	1328	9
10	117	156	231	471	243	324	482	748	263	351	523	787	438	584	871	1085	10
11	88	117	172	389	183	244	361	617	198	264	391	650	329	439	653	895	11
12	67	90	132	326	141	188	277	518	152	203	300	545	253	338	501	751	12
13	53	71	103	277	110	147	217	440	120	160	235	463	199	266	393	639	13
14	42	57	81	238	88	118	172	379	96	128	187	399	159	213	313	550	14
15	34	46	65	207	72	96	139	329	78	104	151	346	129	173	254	478	15
16	-	-	-	-	59	79	114	289	64	85	124	304	107	142	208	419	16
17	-	-	-	-	49	66	94	255	53	71	102	268	89	118	172	370	17
18	-	-	-	-	41	55	78	227	45	60	85	239	75	100	144	330	18
19	-	-	-	-	35	47	66	203	38	51	72	213	63	85	122	295	19
20	-	-	-	-	30	40	56	182	32	43	61	192	54	73	103	266	20
21	-	-	-	-	-	-	-	-	-	-	-	-	47	63	89	240	21
22	-	-	-	-	-	-	-	-	-	-	-	-	41	54	76	218	22

Span (ft)	1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				1-3/4" x 18"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
10	515	687	1025	1202	844	1126		1523	1261	1681		1800	1795			2097	10
11	387	516	768	992	634	846	1262	1349	947	1263		1596	1348	1798		1852	11
12	298	397	590	832	488	651	970	1132	729	973		1433	1039	1385		1658	12
13	234	312	463	708	384	512	762	963	573	765	1139	1235	817	1089		1500	13
14	187	250	369	609	307	410	608	829	459	612	911	1064	654	872	1299	1325	14
15	152	203	299	530	250	333	493	721	373	498	739	925	532	709	1054	1153	15
16	125	167	245	465	206	274	405	633	307	410	607	812	438	584	867	1012	16
17	104	139	203	411	171	229	336	559	256	342	505	718	365	487	721	895	17
18	88	117	170	365	144	193	282	498	216	288	424	639	307	410	606	797	18
19	75	100	144	327	123	164	239	446	183	245	359	573	261	349	514	714	19
20	64	85	122	295	105	140	204	402	157	210	307	516	224	299	439	643	20
21	55	74	105	266	91	121	175	363	136	181	264	467	193	258	378	582	21
22	48	64	90	242	79	105	151	330	118	157	228	425	168	224	328	530	22
23	42	56	78	221	69	92	131	301	103	138	199	388	147	196	286	484	23
24	37	49	68	202	61	81	115	276	91	121	174	355	129	173	250	443	24
25	32	43	60	186	54	72	101	254	80	107	153	326	114	153	220	407	25
26	-	-	-	-	48	64	89	234	71	95	135	301	102	136	195	376	26
27	-	-	-	-	42	57	78	216	64	85	120	278	91	121	173	348	27
28	-	-	-	-	38	51	69	200	57	76	106	258	81	109	154	322	28
29	-	-	-	-	34	46	62	186	51	68	95	240	73	98	138	300	29
30	-	-	-	-	31	41	55	173	46	62	85	223	66	88	123	279	30

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/240 Deflection Resistance, AND the appropriate Live Load column, either the L/480 or L/360 deflection limit. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/240 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 10.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

ACTUAL DEFLECTION BASED ON SPAN AND LIMIT

Span (ft)	L/480	L/360	L/240
10	1/4"	5/16"	1/2"
12	5/16"	3/8"	5/8"
14	3/8"	7/16"	11/16"
16	3/8"	9/16"	13/16"
18	7/16"	5/8"	7/8"
20	1/2"	11/16"	1"
22	9/16"	3/4"	1-1/8"
24	5/8"	13/16"	1-3/16"
26	5/8"	7/8"	1-5/16"
28	11/16"	15/16"	1-3/8"
30	3/4"	1"	1-1/2"

* Deflections rounded to the nearest 1/16".

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To use:

1. Choose the required beam span in the left column. For beams with a pitch greater than 1:12, multiply the horizontal beam span by the slope adjustment factor from the table below.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/180 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For a 16' horizontal span with a pitch of 4:12, select a 2- and 3-ply beam that satisfies an L/360 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE BEAM SPAN: 16' * 1.054 = 16.86' Use 17'

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 16"

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 14"

Span (ft)	1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
6	724	1086		1277	1504			1722	1629			1781				2218	6
7	456	684	908	967	947	1420		1422	1026			1469	1704			1814	7
8	305	458	607	739	634	951		1173	687	1031		1234	1141			1534	8
9	214	321	425	583	445	668	886	926	482	724	960	974	801	1202		1328	9
10	156	234	309	471	324	487	645	748	351	527	699	787	584	876		1085	10
11	117	176	231	389	244	366	483	617	264	396	524	650	439	658	872	895	11
12	90	135	177	326	188	282	371	518	203	305	402	545	338	507	670	751	12
13	71	106	138	277	147	221	291	440	160	240	315	463	266	399	526	639	13
14	57	85	110	238	118	177	232	379	128	192	251	399	213	319	420	550	14
15	46	69	89	207	96	144	187	329	104	156	203	346	173	259	340	478	15
16	38	57	72	181	79	118	154	289	85	128	167	304	142	214	279	419	16
17	31	47	60	160	66	99	127	255	71	107	138	268	118	178	232	370	17
18	-	-	-	-	55	83	106	227	60	90	115	239	100	150	194	330	18
19	-	-	-	-	47	71	90	203	51	76	97	213	85	127	164	295	19
20	-	-	-	-	40	60	76	182	43	65	83	192	73	109	140	266	20
21	-	-	-	-	35	52	65	165	38	57	71	174	63	94	120	240	21
22	-	-	-	-	30	45	56	150	33	49	61	158	54	82	104	218	22

Span (ft)	1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				1-3/4" x 18"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
10	687	1031		1202	1126			1523	1681			1800				2097	10
11	516	774		992	846	1269		1349	1263			1596	1798			1852	11
12	397	596	789	832	651	977		1132	973			1433	1385			1658	12
13	312	469	619	708	512	769		963	765	1147		1235	1089			1500	13
14	250	375	495	609	410	615	813	829	612	919		1064	872	1308		1325	14
15	203	305	401	530	333	500	660	721	498	747		925	709	1064		1153	15
16	167	251	329	465	274	412	542	633	410	615		812	584	876		1012	16
17	139	209	273	411	229	343	451	559	342	513	676	718	487	730		895	17
18	117	176	229	365	193	289	379	498	288	432	568	639	410	615		797	18
19	100	150	194	327	164	246	321	446	245	367	482	573	349	523	689	714	19
20	85	128	165	295	140	211	274	402	210	315	412	516	299	448	589	643	20
21	74	111	142	266	121	182	236	363	181	272	355	467	258	387	507	582	21
22	64	96	123	242	105	158	204	330	157	236	307	425	224	337	440	530	22
23	56	84	107	221	92	138	178	301	138	207	268	388	196	295	384	484	23
24	49	74	93	202	81	122	155	276	121	182	235	355	173	259	337	443	24
25	43	65	82	186	72	108	137	254	107	161	207	326	153	229	297	407	25
26	39	58	72	171	64	96	121	234	95	143	183	301	136	204	263	376	26
27	34	52	63	158	57	85	107	216	85	128	162	278	121	182	234	348	27
28	31	46	56	146	51	76	95	200	76	114	145	258	109	163	209	322	28
29	-	-	-	-	46	69	85	186	68	103	129	240	98	147	187	300	29
30	-	-	-	-	41	62	76	173	62	93	116	223	88	133	168	279	30

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions. For beams with a pitch greater than 1:12, the horizontal beam span must be multiplied by the factor from the SLOPE ADJUSTMENT table.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/180 Deflection Resistance, AND the appropriate Live Load column, either the L/360 or L/240 deflection limit. To design for a Live Load deflection of L/480, use the appropriate column from the Uniform Floor Load tables on page 14. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/180 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 10.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

SLOPE ADJUSTMENT

Slope	Factor
2:12	1.014
3:12	1.031
4:12	1.054
5:12	1.083
6:12	1.118
7:12	1.158
8:12	1.202
9:12	1.250
10:12	1.302
11:12	1.357
12:12	1.414

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DESIGN VALUES (SPECIFIED STRENGTHS – PSI)

Grade	BENDING F_b *	MOE (x 10^6)	COMPRESSION F_c (parallel to grain)	COMPRESSION F_{cp} (perpendicular to grain)	SHEAR F_v
2400F_b-1.7E	4435	1.7	3751	1365	530

NOTES:
* F_b is for 12" depth (d).
For depths greater than 12", adjust F_b by $(12/d)^{1/7}$.
For depths less than 12", adjust F_b by $(12/d)^{1/9}$.
For depths less than 5-1/2", adjust F_b by 1.09.

The values above are for standard term load duration. Bending (F_b), Compression Parallel-to-Grain (F_c) and Shear (F_v) may be adjusted according to code. MOE (E) and Compression Perpendicular-to-Grain (F_{cp}) shall NOT be adjusted.

SECTION PROPERTIES AND FACTORED RESISTANCES

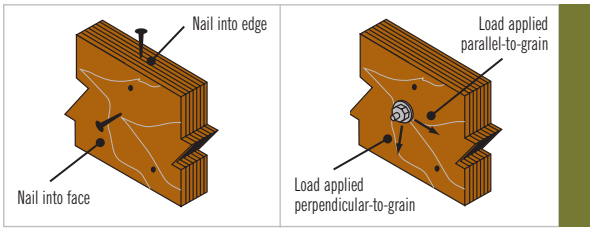
Depth	Weight (lb/ft)				Factored Moment Resistance (lb-ft)				Factored Shear Resistance (lb)				Moment of Inertia (in^4)			
	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"
9-1/2"	4.8	9.5	14.3	19.0	8986	17972	26958	35944	5287	10574	15860	21147	125	250	375	500
11-7/8"	5.9	11.9	17.8	23.8	13697	27393	41090	54787	6608	13217	19825	26434	244	488	733	977
14"	7.0	14.0	21.0	28.0	18601	37202	55803	74404	7791	15582	23373	31164	400	800	1201	1601
16"	8.0	16.0	24.0	32.0	23836	47672	71508	95344	8904	17808	26712	35616	597	1195	1792	2389

MODIFICATION FACTORS:

The Factored Moment (M) and Factored Shear (V) Resistances above are for standard term load duration and may be adjusted according to code.

FASTENER VALUES:

Refer to the current CCMC evaluation report, CCMC 11518-R, for information on the equivalent specific gravity for design of nail and bolt connections. CCMC evaluation reports can be obtained online at www.irc.nrc-cnrc.gc.ca/ccmc.



BEARING LENGTH AND MAXIMUM REACTION CHART

How to use bearing charts:

1. Determine the thickness required for the LP LVL beam and calculate the factored reaction.
2. Select the appropriate table for 1-ply (1-3/4"), 2-ply (3-1/2"), 3-ply (5-1/4") or 4-ply (7").
3. Select a bearing length with a factored reaction that meets or exceeds your calculated value.
4. Make sure the support is structurally adequate to carry the reaction.

Example: 3-1/2" LP LVL with a factored reaction of 14,200 lbs.
Solution: Select a 4" bearing length with a factored resistance of 15,280 lbs.

FACTORED REACTION RESISTANCE (LBS)

Width	Bearing Length (in)																					
	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6	6-1/2	7	7-1/2	8	8-1/2	9	9-1/2	10	10-1/2	11	11-1/2	12
1-3/4"	2860	3820	4770	5730	6680	7640	8590	9550	10510	11460	12420	13370	14330	15280	16240	17190	18150	19110	20060	21020	21970	22930
3-1/2"	5730	7640	9550	11460	13370	15280	17190	19110	21020	22930	24840	26750	28660	30570	32480	34390	36300	38220	40130	42040	43950	45860
5-1/4"	8590	11460	14330	17190	20060	22930	25790	28660	31530	34390	37260	40130	42990	45860	48730	51590	54460	57330	60190	63060	65920	68790
7"	11460	15280	19110	22930	26750	30570	34390	38220	42040	45860	49680	53500	57330	61150	64970	68790	72610	76440	80260	84080	87900	91720

NOTES:

1. Tabulated values are based on the factored compression resistance, perpendicular-to-grain, of the LVL. This is suitable for beams bearing on steel or the end-grain of studs.
2. Verify that the support for the beam is structurally adequate to carry the reaction. The compressive resistance, parallel-to-grain, of studs may require more studs than the bearing length above indicates.
3. For beams bearing on wood plates, the required bearing length will increase based on the bearing resistance (compression perpendicular-to-grain) of the species and grade used for the plate material.
4. Verify local code requirements concerning minimum bearing.

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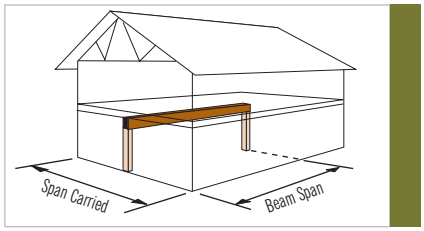
To use these charts:

1. Select the correct table for the beam application you need.
2. Choose the required beam span in the left column.
3. Select the span carried on the top line.
4. Read the beam size or choice of beam sizes from table.

Example: A beam with a 16' span carries 15' simple span joists on each side.

Solution: Using the SIMPLE SPAN JOISTS table below for a 16' beam span supporting a 30' span carried, select either the 3-1/2" x 16" or 5-1/4" x 14" beam.

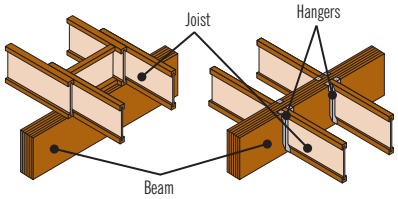


SIMPLE SPAN JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
12	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	**14"**
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14	3-1/2"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	**14"**	**14"**	**14"**
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
16	3-1/2"	14"	14"	14"	16"	16"	**16"**	**16"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"
18'	3-1/2"	16"	16"	16"	16"	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"

For floor joists that are NOT continuous over the beam:

- Floor joist either lap or butt on top of beam, or frame into beam with hangers.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



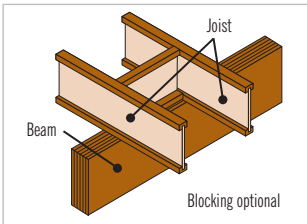
Blocking or other approved method of restraint required

CONTINUOUS JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	**11-7/8"**
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"
12	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	**14"**	**14"**	**14"**	**14"**	**14"**
	5-1/4"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	**14"**	**14"**	**14"**	**16"**	**16"**	**16"**	**16"**
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	**16"**	**16"**	**16"**	**16"**	**16"**	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"
18	3-1/2"	16"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	16"	16"	16"	**16"**	-

For floor joists that are continuous over the beam:

- Floor joist spans are approximately equal on each side of beam.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



GENERAL NOTES:

1. These tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. All loads listed are the specified (unfactored) loads at standard duration.
3. Floor live loads have been reduced in accordance with 4.1.6.9(3) of the 1995 NBC.
4. Floor beam deflections are limited to L/360 for live load and L/240 for total load.
   Roof beam deflections are limited to L/360 for live load and L/180 for total load.
5. Beam Span is center-to-center of supports.
6. Beam Width can be either a single piece of LVL or built up from individual plies of LVL that are nailed and/or bolted together.
   Refer to page 31 for connection details.
7. If the value is "-", then the depth required exceeds the scope of this guide.

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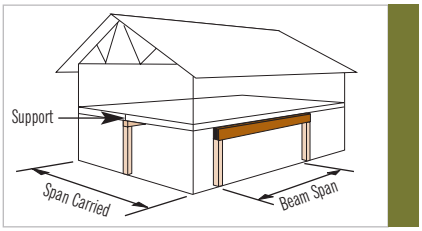
For combined roof and floor loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- Tables include a specified dead load of 100 plf for the second floor wall.
- Interior support at mid-span of the floor system is required.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"
12	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	**14"**
	5-1/4"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	14"	16"	16"	**16"**	**16"**	**16"**	-
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	16"	16"	**16"**	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	**14"**
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
12	3-1/2"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	**14"**	**16"**	**16"**	**16"**
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"
14	3-1/2"	14"	14"	14"	16"	**16"**	**16"**	**16"**	-	-	-	-
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	16"
16	3-1/2"	**16"**	16"	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	-	-

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	**14"**	**14"**	**14"**
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
12	3-1/2"	11-7/8"	14"	14"	14"	**14"**	**16"**	**16"**	**16"**	**16"**	**16"**	-
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"
14	3-1/2"	14"	16"	**16"**	**16"**	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	16"	16"	**16"**	**16"**
16	3-1/2"	**16"**	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	16"	16"	16"	16"	16"	**16"**	-	-	-	-

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	**11-7/8"**
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	**14"**	**14"**	**14"**	**14"**	**14"**	**16"**
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
12	3-1/2"	14"	14"	14"	**14"**	**16"**	**16"**	**16"**	**16"**	-	-	-
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	**14"**
14	3-1/2"	**16"**	**16"**	**16"**	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	16"	16"	**16"**	**16"**	**16"**	-
16	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	16"	16"	16"	16"	**16"**	-	-	-	-	-	-

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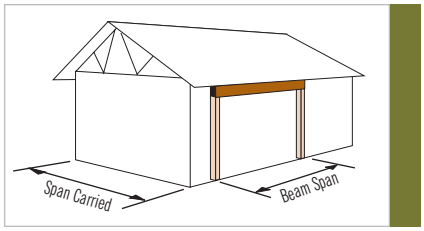
For roof loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
12	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
14	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
16	3-1/2"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
12	3-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14	3-1/2"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
16	3-1/2"	14"	14"	14"	14"	14"	16"	16"	16"	16"	16"	16"
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
12	3-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"
	5-1/4"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	14"	14"	14"	16"	16"	**16"**	**16"**
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
16	3-1/2"	14"	16"	16"	16"	16"	16"	16"	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	16"	16"	16"	16"

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
6	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
8	3-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"
10	3-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
	5-1/4"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	9-1/2"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
12	3-1/2"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	**14"**	**16"**
	5-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	11-7/8"	14"
14	3-1/2"	14"	14"	14"	16"	16"	16"	**16"**	**16"**	**16"**	-	-
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	16"	16"	16"	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	16"	16"	16"	16"	16"	16"	16"	16"

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LP LVL 2400F$_b$-1.7E
Uniform Floor Load (PLF) Resistance

To use:

1. Choose the required beam span in the left column.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/240 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:

For a 16' beam span, select a 2- and 3-ply beam that satisfies an L/480 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE TOTAL LOADS:

Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:

Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 16"

SOLUTION FOR A 3-PLY BEAM:

Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 14"

Span (ft)	1-3/4" x 9-1/2"				1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
6	1093	1457		1781	2135			2386				3007				3674	6
7	688	918	1372	1461	1344	1793		1944	2203			2419				2917	7
8	461	615	917	1117	900	1201		1640	1476	1968		2023	2203			2418	8
9	323	431	643	881	632	843	1259	1345	1036	1382		1738	1547	2063		2064	9
10	236	314	467	712	461	615	916	1088	755	1007		1479	1128	1504		1800	10
11	177	236	350	588	346	462	687	898	567	757	1128	1221	847	1130		1565	11
12	136	182	268	493	266	355	527	753	437	583	867	1024	652	870	1297	1314	12
13	107	143	210	419	209	279	413	640	344	458	681	871	513	684	1019	1118	13
14	86	114	167	360	168	224	330	551	275	367	543	750	411	548	814	962	14
15	69	93	135	313	136	182	267	479	223	298	440	652	334	445	660	837	15
16	57	76	110	274	112	150	219	420	184	246	362	572	275	367	542	734	16
17	48	64	91	242	93	125	181	371	153	205	300	506	229	306	451	649	17
18	40	53	76	215	79	105	152	330	129	172	252	450	193	257	378	578	18
19	34	45	64	193	67	89	128	296	110	146	213	403	164	219	320	518	19
20	-	-	-	-	57	76	109	266	94	125	181	363	141	188	274	466	20
21	-	-	-	-	49	66	93	241	81	108	156	328	121	162	235	422	21
22	-	-	-	-	43	57	80	218	70	94	134	298	105	141	203	383	22
23	-	-	-	-	37	50	69	199	62	82	117	272	92	123	177	350	23
24	-	-	-	-	33	44	60	182	54	72	102	249	81	108	155	321	24
25	-	-	-	-	-	-	-	-	48	64	89	229	72	96	136	295	25
26	-	-	-	-	-	-	-	-	43	57	79	211	64	85	120	272	26
27	-	-	-	-	-	-	-	-	38	51	69	195	57	76	106	251	27
28	-	-	-	-	-	-	-	-	34	45	61	181	51	68	94	233	28
29	-	-	-	-	-	-	-	-	30	41	54	168	46	61	84	216	29
30	-	-	-	-	-	-	-	-	-	-	-	-	41	55	75	201	30

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/240 Deflection Resistance, AND the appropriate Live Load column, either the L/480 or L/360 deflection limit. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/240 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 10.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

ACTUAL DEFLECTION BASED ON SPAN AND LIMIT

Span (ft)	L/480	L/360	L/240
10	1/4"	5/16"	1/2"
12	5/16"	3/8"	5/8"
14	3/8"	7/16"	11/16"
16	3/8"	9/16"	13/16"
18	7/16"	5/8"	7/8"
20	1/2"	11/16"	1"
22	9/16"	3/4"	1-1/8"
24	5/8"	13/16"	1-3/16"
26	5/8"	7/8"	1-5/16"
28	11/16"	15/16"	1-3/8"
30	3/4"	1"	1-1/2"

* Deflections rounded to the nearest 1/16".

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To use:

1. Choose the required beam span in the left column. For beams with a pitch greater than 1:12, multiply the horizontal beam span by the slope adjustment factor from the table below.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/180 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For a 16' horizontal span with a pitch of 4:12, select a 2- and 3-ply beam that satisfies an L/360 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE BEAM SPAN: 16' * 1.054 = 16.86' Use 17'

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 16"

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 14"

Span (ft)	1-3/4" x 9-1/2"				1-3/4" x 11-7/8"				1-3/4" x 14"				1-3/4" x 16"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
6	1457			1781				2386				3007				3674	6
7	918	1377		1461	1793			1944				2419				2917	7
8	615	922		1117	1201			1640	1968			2023				2418	8
9	431	647	859	881	843	1265		1345	1382			1738	2063			2064	9
10	314	472	625	712	615	922		1088	1007			1479	1504			1800	10
11	236	354	468	588	462	693		898	757	1135		1221	1130			1565	11
12	182	273	359	493	355	533	705	753	583	874		1024	870	1305		1314	12
13	143	214	281	419	279	419	553	640	458	688		871	684	1027		1118	13
14	114	172	224	360	224	336	442	551	367	550	727	750	548	822		962	14
15	93	139	181	313	182	273	358	479	298	447	590	652	445	668		837	15
16	76	115	149	274	150	225	294	420	246	369	485	572	367	550	726	734	16
17	64	96	123	242	125	187	244	371	205	307	403	506	306	459	604	649	17
18	53	80	103	215	105	158	204	330	172	259	338	450	257	386	507	578	18
19	45	68	87	193	89	134	173	296	146	220	286	403	219	328	430	518	19
20	39	59	73	173	76	115	147	266	125	188	244	363	188	282	368	466	20
21	34	51	63	157	66	99	126	241	108	163	210	328	162	243	316	422	21
22	-	-	-	-	57	86	109	218	94	141	182	298	141	211	274	383	22
23	-	-	-	-	50	75	95	199	82	124	158	272	123	185	239	350	23
24	-	-	-	-	44	66	83	182	72	109	138	249	108	163	209	321	24
25	-	-	-	-	39	59	72	167	64	96	121	229	96	144	184	295	25
26	-	-	-	-	34	52	64	154	57	86	107	211	85	128	163	272	26
27	-	-	-	-	31	46	56	142	51	76	95	195	76	114	144	251	27
28	-	-	-	-	-	-	-	-	45	68	84	181	68	102	129	233	28
29	-	-	-	-	-	-	-	-	41	61	75	168	61	92	115	216	29
30	-	-	-	-	-	-	-	-	37	55	67	156	55	83	103	201	30

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions. For beams with a pitch greater than 1:12, the horizontal beam span must be multiplied by the factor from the SLOPE ADJUSTMENT table.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/180 Deflection Resistance, AND the appropriate Live Load column, either the L/360 or L/240 deflection limit. To design for a Live Load deflection of L/480, use the appropriate column from the Uniform Floor Load tables on page 14. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/180 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 10.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

SLOPE ADJUSTMENT

Slope	Factor
2:12	1.014
3:12	1.031
4:12	1.054
5:12	1.083
6:12	1.118
7:12	1.158
8:12	1.202
9:12	1.250
10:12	1.302
11:12	1.357
12:12	1.414

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DESIGN VALUES (SPECIFIED STRENGTHS – PSI)

Grade	BENDING F_b *	MOE (x 10^6)	COMPRESSION F_c (parallel to grain)	COMPRESSION F_{cp} (perpendicular to grain)	SHEAR F_v
2250F_b-1.5E	4158	1.5	3751	1365	530

NOTES:
* F_b is for 12" depth (d).
For depths greater than 12", adjust F_b by $(12/d)^{1/7}$.
For depths less than 12", adjust F_b by $(12/d)^{1/9}$.
For depths less than 5-1/2", adjust F_b by 1.09.

The values above are for standard term load duration. Bending (F_b), Compression Parallel-to-Grain (F_c) and Shear (F_v) may be adjusted according to code. MOE (E) and Compression Perpendicular-to-Grain (F_{cp}) shall NOT be adjusted.

SECTION PROPERTIES AND FACTORED RESISTANCES

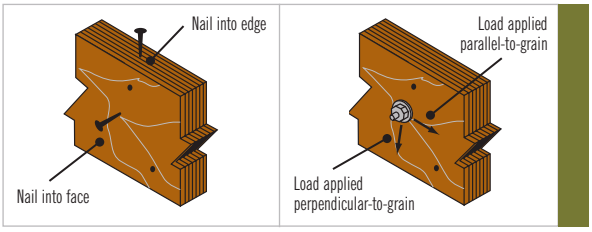
Depth	Weight (lb/ft)				Factored Moment Resistance (lb-ft)				Factored Shear Resistance (lb)				Moment of Inertia (in^4)			
	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"	1-3/4"	3-1/2"	5-1/4"	7"
4-3/8"	2.2	4.4	6.6	8.8	1948	3895	5843	7790	2435	4869	7304	9739	12	24	37	49
5-1/2"	2.8	5.5	8.3	11.0	3001	6001	9002	12002	3061	6122	9182	12243	24	49	73	97
7-1/4"	3.6	7.3	10.9	14.5	5056	10112	15169	20225	4035	8069	12104	16139	56	111	167	222
9-1/4"	4.6	9.3	13.9	18.5	8011	16022	24032	32043	5148	10295	15443	20591	115	231	346	462
9-1/2"	4.8	9.5	14.3	19.0	8425	16849	25274	33699	5287	10574	15860	21147	125	250	375	500
11-1/4"	5.6	11.3	16.9	22.5	11594	23189	34783	46378	6261	12521	18782	25043	208	415	623	831
11-7/8"	5.9	11.9	17.8	23.8	12841	25682	38524	51365	6608	13217	19825	26434	244	488	733	977
14"	7.0	14.0	21.0	28.0	17439	34878	52317	69757	7791	15582	23373	31164	400	800	1201	1601

MODIFICATION FACTORS:

The Factored Moment (M) and Factored Shear (V) Resistances above are for standard term load duration and may be adjusted according to code.

FASTENER VALUES:

Refer to the current CCMC evaluation report, CCMC 11518-R, for information on the equivalent specific gravity for design of nail and bolt connections. CCMC evaluation reports can be obtained online at www.irc.nrc-cnrc.gc.ca/ccmc.



BEARING LENGTH AND MAXIMUM REACTION CHART

How to use bearing charts:

1. Determine the thickness required for the LP LVL beam and calculate the factored reaction.
2. Select the appropriate table for 1-ply (1-3/4"), 2-ply (3-1/2"), 3-ply (5-1/4") or 4-ply (7").
3. Select a bearing length with a factored reaction that meets or exceeds your calculated value.
4. Make sure the support is structurally adequate to carry the reaction.

Example: 3-1/2" LP LVL with a factored reaction of 14,200 lbs.

Solution: Select a 4" bearing length with a factored resistance of 15,280 lbs.

FACTORED REACTION RESISTANCE (LBS)

Width	Bearing Length (in)																					
	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6	6-1/2	7	7-1/2	8	8-1/2	9	9-1/2	10	10-1/2	11	11-1/2	12
1-3/4"	2860	3820	4770	5730	6680	7640	8590	9550	10510	11460	12420	13370	14330	15280	16240	17190	18150	19110	20060	21020	21970	22930
3-1/2"	5730	7640	9550	11460	13370	15280	17190	19110	21020	22930	24840	26750	28660	30570	32480	34390	36300	38220	40130	42040	43950	45860
5-1/4"	8590	11460	14330	17190	20060	22930	25790	28660	31530	34390	37260	40130	42990	45860	48730	51590	54460	57330	60190	63060	65920	68790
7"	11460	15280	19110	22930	26750	30570	34390	38220	42040	45860	49680	53500	57330	61150	64970	68790	72610	76440	80260	84080	87900	91720

NOTES:
1. Tabulated values are based on the factored compression resistance, perpendicular-to-grain, of the LVL. This is suitable for beams bearing on steel or the end-grain of studs.
2. Verify that the support for the beam is structurally adequate to carry the reaction. The compressive resistance, parallel-to-grain, of studs may require more studs than the bearing length above indicates.
3. For beams bearing on wood plates, the required bearing length will increase based on the bearing resistance (compression perpendicular-to-grain) of the species and grade used for the plate material.
4. Verify local code requirements concerning minimum bearing..

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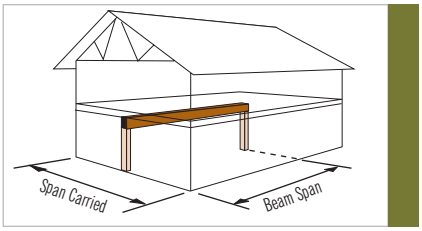
To use these charts:

1. Select the correct table for the beam application you need.
2. Choose the required beam span in the left column.
3. Select the span carried on the top line.
4. Read the beam size or choice of beam sizes from the table.

Example: A beam with an 8' span carries 15' simple span joists on each side.

Solution: Using the SIMPLE SPAN JOISTS table below for a 8' beam span supporting a 30' span carried, select either the 3-1/2" x 9-1/4" or 5-1/4" x 7-1/4" beam.

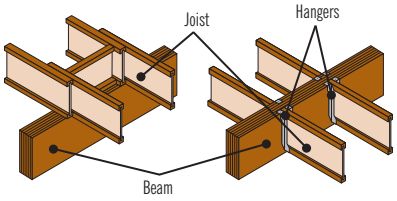


SIMPLE SPAN JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	**14"**
	5-1/4"	9-1/4"	9-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	14"	14"	14"	14"	14"	14"	14"	-	-	-	-
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
16	3-1/2"	14"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	-	-	-

For floor joists that are NOT continuous over the beam:

- Floor joist either lap or butt on top of beam, or frame into beam with hangers.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



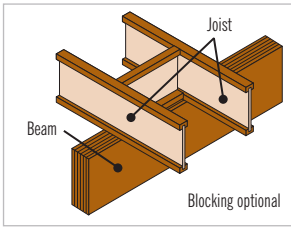
Blocking or other approved method of restraint required

CONTINUOUS JOISTS (SPECIFIED FLOOR LOADS: 40 PSF LIVE LOAD, 15 PSF DEAD LOAD)

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	**11-7/8"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	**14"**	**14"**	**14"**	**14"**	**14"**
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	-	-	-	-	-	-	-
	5-1/4"	11-1/4"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"
16	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	-	-	-	-	-	-

For floor joists that are continuous over the beam:

- Floor joist spans are approximately equal on each side of beam.
- Beam Span is valid for simple span beams and continuous, equal span beams.
- 3" bearing length is required at end supports.
- 6" bearing length is required at interior supports EXCEPT 7-1/2" bearing is required where **bold**.



GENERAL NOTES:

1. These tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. All loads listed are the specified (unfactored) loads at standard duration.
3. Floor live loads have been reduced in accordance with 4.1.6.9(3) of the 1995 NBC.
4. Floor beam deflections are limited to L/360 for live load and L/240 for total load.
   Roof beam deflections are limited to L/360 for live load and L/180 for total load.
5. Beam Span is center-to-center of supports.
6. Beam Width can be either a single piece of LVL or built up from individual plies of LVL that are nailed and/or bolted together.
   Refer to page 31 for connection details.
7. If the value is "-", then the depth required exceeds the scope of this guide.

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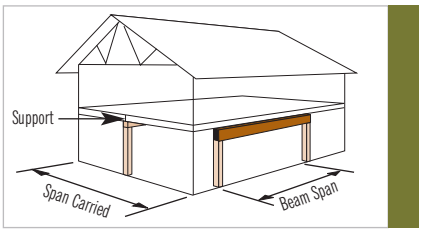
For combined roof and floor loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- Tables include a specified dead load of 100 plf for the second floor wall.
- Interior support at mid-span of the floor system is required.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	-
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"
14	3-1/2"	14"	14"	14"	-	-	-	-	-	-	-	-
	5-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	14"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	**14"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	-	-	-	-
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"
14	3-1/2"	14"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	-	-	-

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	14"	14"	14"	**14"**	**14"**	**14"**
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	14"	14"	14"	14"	-	-	-	-	-	-	-
	5-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"
14	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	-	-	-	-	-	-

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD
FLOOR: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	**11-7/8"**
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2
10	3-1/2"	11-1/4"	11-1/4"	11-7/8"	14"	14"	**14"**	**14"**	**14"**	**14"**	-	-
	5-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
12	3-1/2"	14"	14"	14"	-	-	-	-	-	-	-	-
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	-
14	3-1/2"	-	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	-	-	-	-	-	-	-	-

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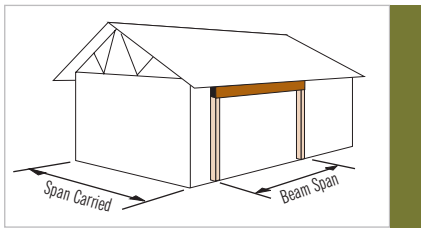
For roof loads:

- Beam Span is valid for simple span headers only.
- Roof system includes a 2' overhang.
- 3" bearing length is required at end supports EXCEPT 4-1/2" bearing is required where **bold**.
- If the value is "-", then the depth required exceeds the scope of this guide.
- Refer to the GENERAL NOTES and instructions for using the Quick Reference Tables.



SPECIFIED LOADS
ROOF: 20 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
14	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"

SPECIFIED LOADS
ROOF: 30 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
8	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
10	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
14	3-1/2"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	-
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"	14"	14"

SPECIFIED LOADS
ROOF: 40 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"
12	3-1/2"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"
14	3-1/2"	14"	14"	14"	14"	14"	-	-	-	-	-	-
	5-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"

SPECIFIED LOADS
ROOF: 50 PSF LIVE, 15 PSF DEAD

Beam Span (ft)	Beam Width	Span Carried By Beam (ft)										
		20	22	24	26	28	30	32	34	36	38	40
4	3-1/2"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"	5-1/2"
	5-1/4"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"	4-3/8"
6	3-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
	5-1/4"	5-1/2"	5-1/2"	5-1/2"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"	7-1/4"
8	3-1/2"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	9-1/2"	11-1/4"
	5-1/4"	7-1/4"	7-1/4"	7-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"
10	3-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	11-7/8"	14"
	5-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/4"	9-1/2"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"
12	3-1/2"	11-7/8"	14"	14"	14"	14"	14"	14"	14"	14"	-	-
	5-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-1/4"	11-7/8"	11-7/8"	14"	14"	14"	14"
14	3-1/2"	14"	-	-	-	-	-	-	-	-	-	-
	5-1/4"	14"	14"	14"	14"	14"	14"	14"	14"	-	-	-

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LP LVL 2250F$_b$-1.5E
Uniform Floor Load (PLF) Resistance

To use:

1. Choose the required beam span in the left column.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/240 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For an 8' beam span, select a 2- and 3-ply beam that satisfies an L/480 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 9-1/4"

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 7-1/4"

Span (ft)	1-3/4" x 4-3/8"				1-3/4" x 5-1/2"				1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
4	318	424	633	971	631	842	1260	1495	1447	1929		2123				2971	4
5	162	217	323	620	323	431	644	956	740	987	1478	1595	1538	2051		2180	5
6	94	125	186	430	187	249	371	663	428	571	853	1119	890	1187		1722	6
7	59	79	116	315	117	157	233	486	270	360	536	820	560	747	1117	1302	7
8	39	53	77	240	78	105	155	371	180	241	358	627	375	500	746	995	8
9	-	-	-	-	55	73	108	292	127	169	250	494	263	351	523	785	9
10	-	-	-	-	40	53	78	236	92	123	181	399	192	256	380	635	10
11	-	-	-	-	30	40	58	194	69	92	135	329	144	192	284	523	11
12	-	-	-	-	-	-	-	-	53	71	103	276	111	148	218	439	12
13	-	-	-	-	-	-	-	-	42	56	80	234	87	116	170	373	13
14	-	-	-	-	-	-	-	-	33	45	63	201	70	93	135	321	14
15	-	-	-	-	-	-	-	-	-	-	-	-	56	75	109	279	15
16	-	-	-	-	-	-	-	-	-	-	-	-	46	62	89	244	16
17	-	-	-	-	-	-	-	-	-	-	-	-	39	52	73	215	17
18	-	-	-	-	-	-	-	-	-	-	-	-	32	43	61	192	18
19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20

Span (ft)	1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				1-3/4" x 11-7/8"				1-3/4" x 14"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	L/480	L/360	L/240	Resistance	
8	407	542	809	1047	675	901	1346	1442	794	1059	1583	1597	1302	1736		2023	8
9	285	381	566	826	474	632	943	1138	558	744	1110	1260	914	1219		1713	9
10	208	277	412	668	346	461	686	920	407	542	808	1019	666	889	1326	1386	10
11	156	208	308	551	260	346	514	759	305	407	605	841	501	668	995	1144	11
12	120	160	236	462	200	267	394	637	235	314	465	705	385	514	764	960	12
13	94	126	184	392	157	210	309	541	185	247	364	600	303	404	600	816	13
14	75	101	147	337	126	168	246	466	148	197	290	516	243	324	479	703	14
15	61	82	118	293	102	136	199	405	120	160	235	449	197	263	388	611	15
16	50	67	96	257	84	112	163	355	99	132	192	393	162	217	318	536	16
17	42	56	80	227	70	93	135	313	82	110	159	348	135	181	264	473	17
18	35	47	66	202	59	79	113	279	69	93	133	309	114	152	221	421	18
19	30	40	56	180	50	67	95	249	59	79	112	277	97	129	187	377	19
20	-	-	-	-	43	57	80	224	50	67	95	249	83	111	159	340	20
21	-	-	-	-	37	49	69	203	43	58	81	225	72	96	137	307	21
22	-	-	-	-	32	43	59	184	38	50	70	204	62	83	118	279	22
23	-	-	-	-	-	-	-	-	33	44	60	186	54	73	102	254	23
24	-	-	-	-	-	-	-	-	-	-	-	-	48	64	89	233	24
25	-	-	-	-	-	-	-	-	-	-	-	-	42	56	78	214	25
26	-	-	-	-	-	-	-	-	-	-	-	-	37	50	68	197	26
27	-	-	-	-	-	-	-	-	-	-	-	-	33	45	60	182	27
28	-	-	-	-	-	-	-	-	-	-	-	-	30	40	53	169	28

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design. Vibration has NOT been considered.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/240 Deflection Resistance, AND the appropriate Live Load column, either the L/480 or L/360 deflection limit. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/240 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 16.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

ACTUAL DEFLECTION BASED ON SPAN AND LIMIT

Span (ft)	L/480	L/360	L/240
10	1/4"	5/16"	1/2"
12	5/16"	3/8"	5/8"
14	3/8"	7/16"	11/16"
16	3/8"	9/16"	13/16"
18	7/16"	5/8"	7/8"
20	1/2"	11/16"	1"
22	9/16"	3/4"	1-1/8"
24	5/8"	13/16"	1-3/16"
26	5/8"	7/8"	1-5/16"
28	11/16"	15/16"	1-3/8"
30	3/4"	1"	1-1/2"

* Deflections rounded to the nearest 1/16".

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To use:

1. Choose the required beam span in the left column. For beams with a pitch greater than 1:12, multiply the horizontal beam span by the slope adjustment factor from the table below.
2. Divide the design loads by the desired number of plies to verify each ply of the beam.
3. Select a beam that exceeds the Factored Total Resistance, the Total L/180 Resistance, and the appropriate Live Load Deflection Resistance.
4. Check bearing requirements.

EXAMPLE:
For an 8' horizontal span with a pitch of 4:12, select a 2- and 3-ply beam that satisfies an L/360 Live Load deflection limit for the following specified loads: Live Load = 480 plf; Dead Load = 220 plf

CALCULATE BEAM SPAN: 8' * 1.054 = 8.43' Use 9'

CALCULATE TOTAL LOADS:
Factored Total Load = (1.5 * 480) + (1.25 * 220) = 995 plf
Unfactored Total Load = 480 + 220 = 700 plf

SOLUTION FOR A 2-PLY BEAM:
Factored Total Load per ply = 995/2 = 498 plf
Unfactored Total Load per ply = 700/2 = 350 plf
Unfactored Live Load per ply = 480/2 = 240 plf
Use 2 plies 1-3/4" x 9-1/4

SOLUTION FOR A 3-PLY BEAM:
Factored Total Load per ply = 995/3 = 332 plf
Unfactored Total Load per ply = 700/3 = 234 plf
Unfactored Live Load per ply = 480/3 = 160 plf
Use 3 plies 1-3/4" x 7-1/4"

Span (ft)	1-3/4" x 4-3/8"				1-3/4" x 5-1/2"				1-3/4" x 7-1/4"				1-3/4" x 9-1/4"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
4	424	636	845	971	842	1263		1495	1929			2123				2971	4
5	217	325	432	620	431	647	859	956	987	1481		1595	2051			2180	5
6	125	188	249	430	249	374	496	663	571	857		1119	1187			1722	6
7	79	118	156	315	157	235	311	486	360	540	716	820	747	1121		1302	7
8	53	79	103	240	105	157	207	371	241	361	478	627	500	751		995	8
9	37	55	72	189	73	110	145	292	169	254	335	494	351	527	699	785	9
10	-	-	-	-	53	80	105	236	123	185	243	399	256	384	508	635	10
11	-	-	-	-	40	60	78	194	92	139	181	329	192	289	380	523	11
12	-	-	-	-	31	46	59	163	71	107	139	276	148	222	292	439	12
13	-	-	-	-	-	-	-	-	56	84	108	234	116	175	228	373	13
14	-	-	-	-	-	-	-	-	45	67	86	201	93	140	182	321	14
15	-	-	-	-	-	-	-	-	36	54	69	175	75	113	147	279	15
16	-	-	-	-	-	-	-	-	30	45	56	153	62	93	120	244	16
17	-	-	-	-	-	-	-	-	-	-	-	-	52	78	99	215	17
18	-	-	-	-	-	-	-	-	-	-	-	-	43	65	83	192	18
19	-	-	-	-	-	-	-	-	-	-	-	-	37	56	70	171	19
20	-	-	-	-	-	-	-	-	-	-	-	-	32	48	59	154	20

Span (ft)	1-3/4" x 9-1/2"				1-3/4" x 11-1/4"				1-3/4" x 11-7/8"				1-3/4" x 14"				Span (ft)
	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	Unfactored Defl. Resistance			Factored	
	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	Live Load		Total	Total	
	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	L/360	L/240	L/180	Resistance	
8	542	814		1047	901	1351		1442	1059	1589		1597	1736			2023	8
9	381	571	757	826	632	949		1138	744	1116		1260	1219			1713	9
10	277	416	550	668	461	692	917	920	542	814		1019	889	1333		1386	10
11	208	313	412	551	346	520	687	759	407	611	809	841	668	1002		1144	11
12	160	241	316	462	267	400	528	637	314	471	622	705	514	771		960	12
13	126	189	248	392	210	315	414	541	247	370	488	600	404	607	802	816	13
14	101	151	197	337	168	252	330	466	197	296	389	516	324	486	641	703	14
15	82	123	159	293	136	205	267	405	160	241	315	449	263	395	519	611	15
16	67	101	130	257	112	168	219	355	132	198	259	393	217	325	427	536	16
17	56	84	108	227	93	140	182	313	110	165	214	348	181	271	354	473	17
18	47	71	90	202	79	118	152	279	93	139	180	309	152	228	297	421	18
19	40	60	76	180	67	100	128	249	79	118	152	277	129	194	252	377	19
20	34	52	64	162	57	86	109	224	67	101	129	249	111	166	215	340	20
21	30	45	55	146	49	74	94	203	58	87	111	225	96	144	185	307	21
22	-	-	-	-	43	65	81	184	50	76	95	204	83	125	160	279	22
23	-	-	-	-	37	56	70	168	44	66	83	186	73	109	139	254	23
24	-	-	-	-	33	50	61	153	39	58	72	170	64	96	121	233	24
25	-	-	-	-	-	-	-	-	34	52	63	156	56	85	106	214	25
26	-	-	-	-	-	-	-	-	30	46	55	144	50	75	94	197	26
27	-	-	-	-	-	-	-	-	-	-	-	-	45	67	83	182	27
28	-	-	-	-	-	-	-	-	-	-	-	-	40	60	74	169	28

NOTES:

1. The values in these tables meet the NBC 1995 requirements for Limit States Design.
2. Span is defined as center-to-center of bearings and is valid for simple span and equal, continuous span conditions. For beams with a pitch greater than 1:12, the horizontal beam span must be multiplied by the factor from the SLOPE ADJUSTMENT table.
3. These tables assume full lateral support of the compression edge. Full support is considered to be a maximum unbraced length of 24".
4. The designer must check both the Factored Total Resistance and the Total L/180 Deflection Resistance, AND the appropriate Live Load column, either the L/360 or L/240 deflection limit. To design for a Live Load deflection of L/480, use the appropriate column from the Uniform Floor Load tables on page 20. Unfactored Deflection Resistance values that are blank are governed by the Factored Total Load. Do not use a product where designated "-" without further analysis by a design professional.
5. All values listed are based on uniform loads of standard duration. The dead load MUST NOT exceed the live load to use these tables.
6. The Unfactored Deflection Resistance for Total L/180 does NOT include the effects of long term loading (creep).
7. The total load values have been adjusted to account for the self-weight of the beam.
8. Proper bearing must be provided at each support. The required bearing can be determined from the Factored Reaction Resistance table on page 16.
9. Depths of 16" and greater should be used with a minimum of two plies unless designed specifically as a single ply of 1-3/4" with proper lateral bracing spaced at most every 24" along the length. (EXAMPLE - the marriage beam for each half of a manufactured home before units are joined.)
10. The values in the tables are for a single ply of 1-3/4" LVL. Double the values for a 2-ply or 3-1/2" thickness (or divide design loads by 2 to use the table directly to verify each ply of a 2-ply beam). Triple the values for a 3-ply or 5-1/4" thickness (or divide design loads by 3 to use the table directly to verify each ply of a 3-ply beam). Quadruple the values for 4-ply or 7" thickness. (Or divide the design loads by 4 to use the table directly to verify each ply of a 4-ply beam.)
11. Side-loaded beams built up from multiple plies of LVL (e.g., supporting joists connected to the beam by hangers) may have a limited load capacity depending on the method of connecting the plies. Refer to page 31 for connection details and limits on side-loaded members.

SLOPE ADJUSTMENT

Slope	Factor
2:12	1.014
3:12	1.031
4:12	1.054
5:12	1.083
6:12	1.118
7:12	1.158
8:12	1.202
9:12	1.250
10:12	1.302
11:12	1.357
12:12	1.414

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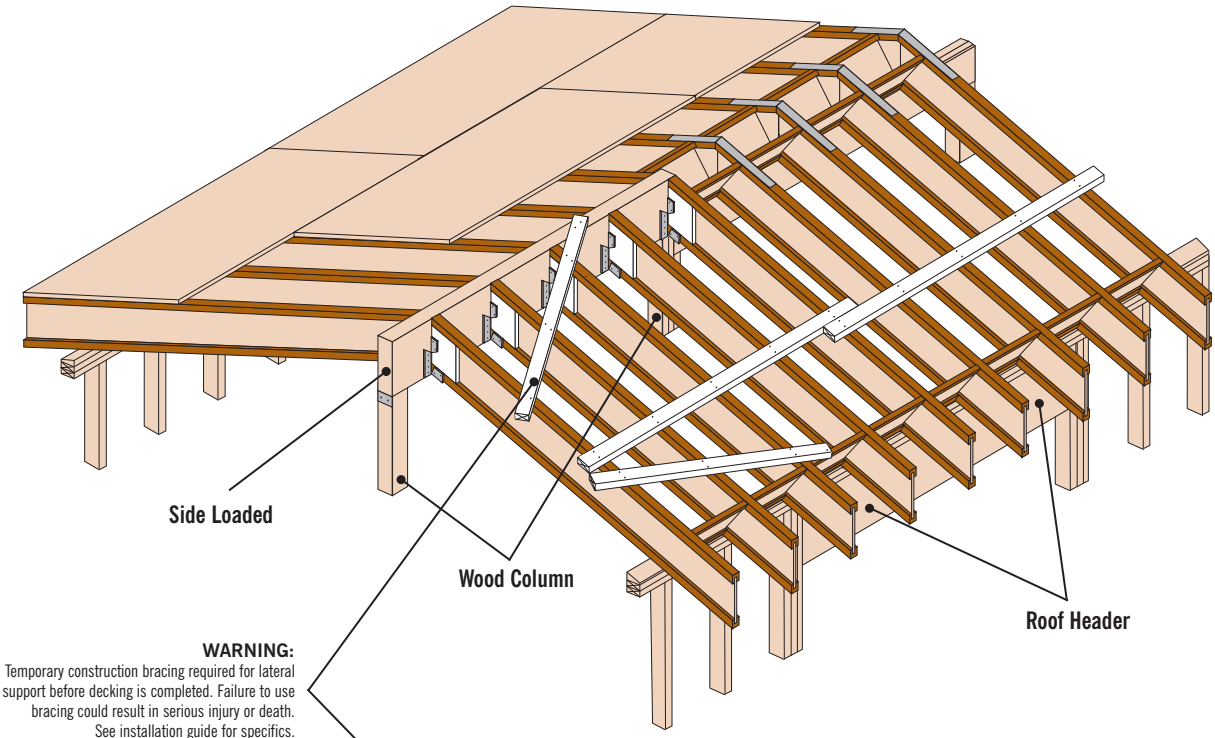
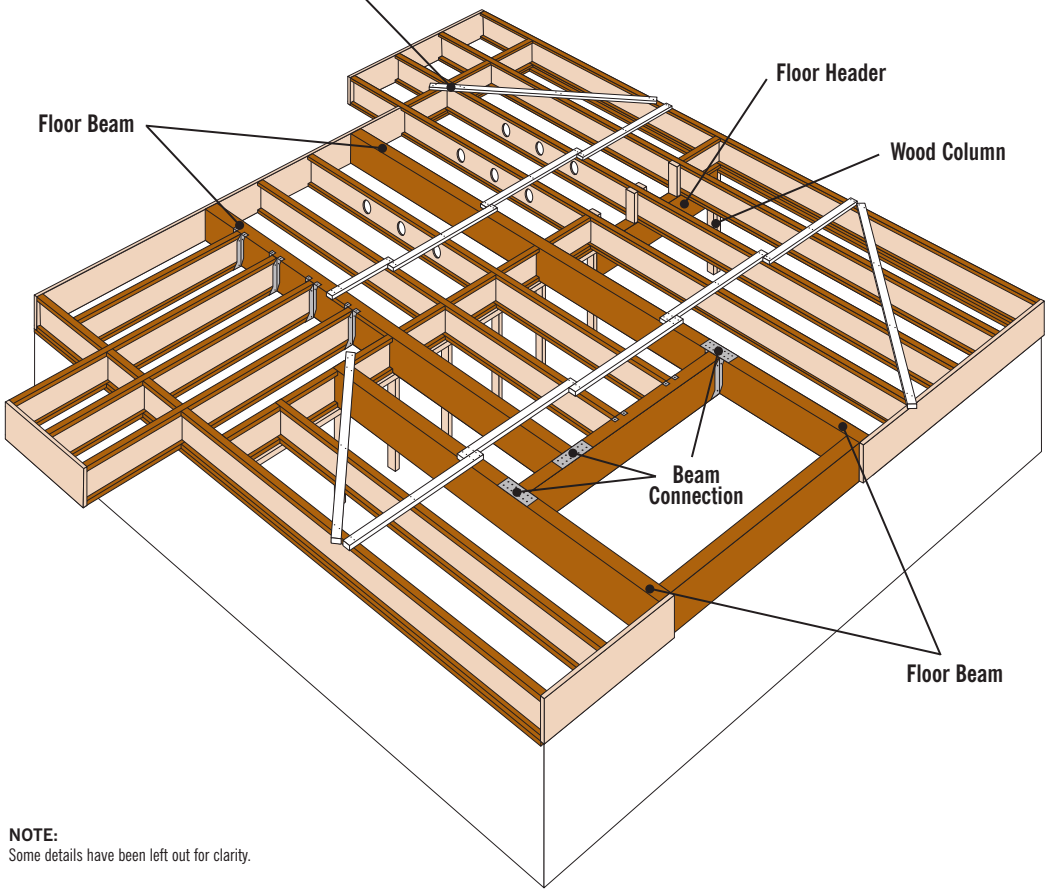
Typical Roof & Flooring Applications



WARNING:
Temporary construction bracing required for lateral support before decking is completed. Failure to use bracing could result in serious injury or death. See installation guide for specifics.



NOTE:
Some details have been left out for clarity.

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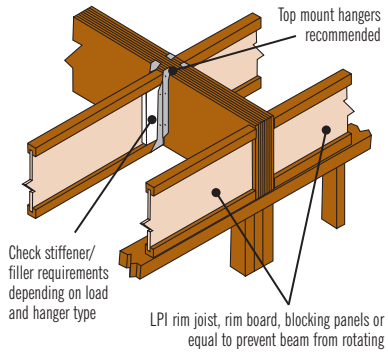
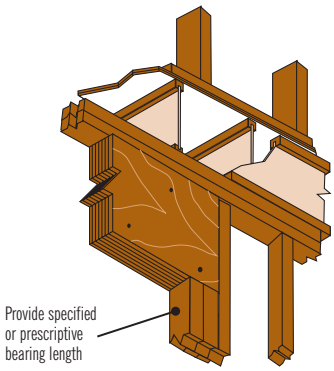
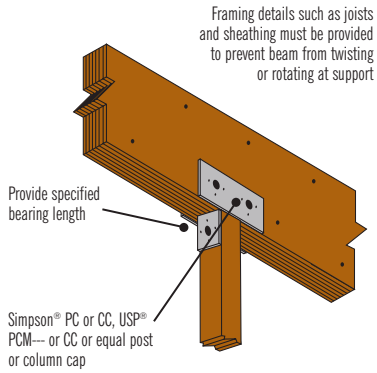
FLOOR BEAM
(Flush ceiling)



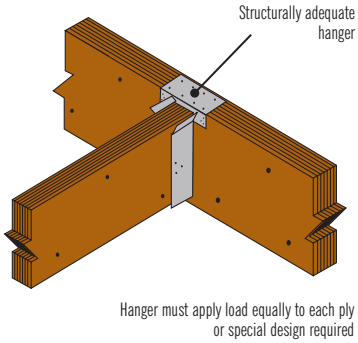
WINDOW/DOOR HEADER



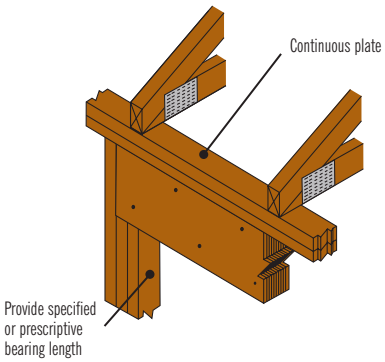
WOOD COLUMN



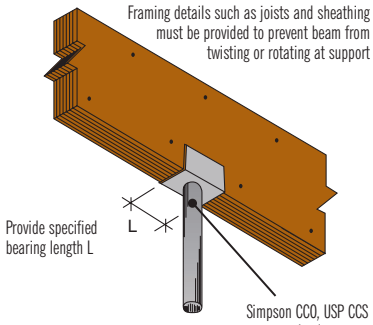
BEAM CONNECTION



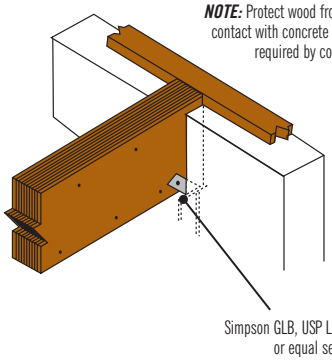
WINDOW/DOOR HEADER



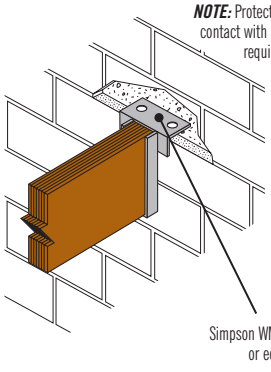
STEEL COLUMN



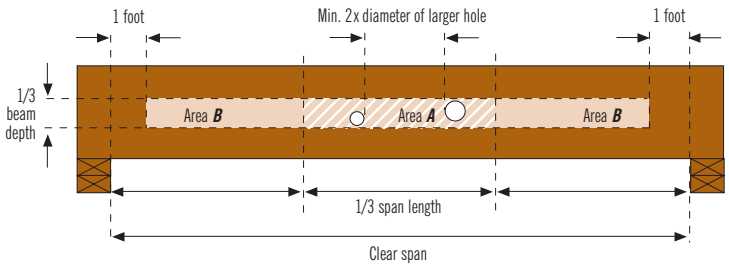
CONCRETE WALL



MASONRY HANGER



LVL HOLE DETAILS



NOTES:

1. These guidelines apply to uniformly loaded beams selected from the Quick Reference Tables or the Uniform Load Tables or designed with LP's design/specification software only. For all other applications, such as beams with concentrated loads, please contact your LP Engineered Wood Products distributor for assistance.
2. Round holes can be drilled anywhere in "Area **A**" provided that: no more than four holes are cut, with the minimum spacing described in the diagram. The maximum hole size is 1-1/2" for depths up to 9-1/4", and 2" for depths greater than 9-1/4".
3. Rectangular holes are NOT allowed.
4. DO NOT drill holes in cantilevers without prior approval from the project engineer/architect.
5. Other hole sizes and configurations MAY be possible with further engineering analysis. For more information, contact your LP Engineered Wood Products distributor.
6. Up to three 3/4" holes may be drilled in "Area **B**" to accommodate wiring and/or water lines. These holes must be at least 12" apart. The holes should be located in the middle third of the depth, or a minimum of 3" from the bottom of the beam. For beams shallower than 9-1/4", locate holes at mid-depth.
7. Protect plumbing holes from moisture.

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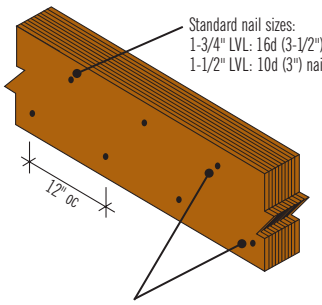
Connection of Multiple Ply Beams

TOP LOADED BEAM – NAILED CONNECTION
(See Connection Assemblies for more details)

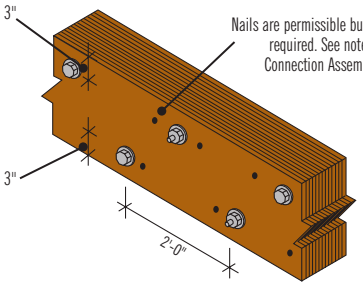
Framing is applied to top of the beam so that each ply carries an equal load



Two rows for depths up to 12"
Three rows for depths up to 18"
Four rows for depths up to 24"

TOP LOADED BEAM – BOLTED CONNECTION
(See Connection Assemblies for more details)

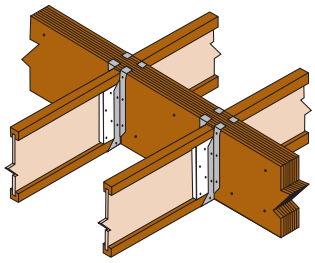
Framing is applied to top of the beam so that each ply carries an equal load



ASTM grade A-307
(or better) 1/2" bolts.
Use washers on both faces.

SIDE LOADED BEAM
(See Connection Assemblies for more details)

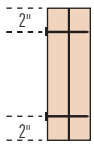
Framing is applied to sides of the beam



SIDE LOADS ARE NOT RECOMMENDED FOR 7" BEAMS UNLESS EQUALLY APPLIED TO BOTH FACES. Refer to Uniform Load for Side Loaded for proper nail and/or bolt rows and spacing.

CONNECTION ASSEMBLIES

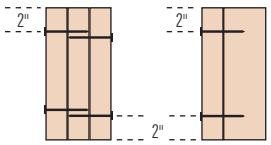
3-1/2" WIDE BEAMS



2 pieces 1-3/4"

DETAIL A*

5-1/4" WIDE BEAMS



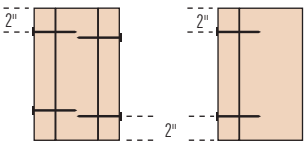
3 pieces 1-3/4"

DETAIL B*

1 piece 1-3/4"
1 piece 3-1/2"

DETAIL C*

7" WIDE BEAMS

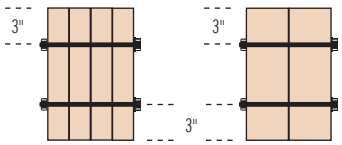


2 pieces 1-3/4"
1 piece 3-1/2"

DETAIL D*

1 piece 1-3/4"
1 piece 5-1/4"

DETAIL E*



4 pieces 1-3/4"

DETAIL F

2 pieces 3-1/2"

DETAIL G

FACTORED UNIFORM LOAD RESISTANCE FOR SIDE LOADED BEAMS (LBS.)

Connection Detail	2 Rows of Nails at 12" oc*	3 Rows of Nails at 12" oc*	2 Rows of Bolts at 24" oc	2 Rows of Bolts at 12" oc
A	860	1290	680	1360
B	645	968	510	1020
C	645	968	765	1530
D	573	860	680	1360
E	573	860	701	1402
F	na	na	453	906
G	na	na	1360	2720

LP LVL

* 3 rows of nails are required for depths greater than 12", up to 18". 4 rows of nails for depths greater than 18", up to 24".

NAIL SCHEDULE

Nail Length (in.)	Nail Diameter mm (in.)	Factored Lateral Resistance (lbs.)	Nail Size Factor	Shank Type
3.50	4.06 (0.160)	229	1.065	common wire
	3.86 (0.152)	215	1.000	common spiral
3.25	3.66 (0.144)	188	0.874	common wire
	3.10 (0.122)	124	0.577	common spiral
3.00	3.66 (0.144)	188	0.874	common wire
	3.10 (0.122)	124	0.577	common spiral

LP LVL

NOTES:

1. Values are for standard duration (100%) and can be increased for shorter durations (115%) where applicable.
2. If the dead load exceeds the live load, the appropriate load duration factor (<1) must be applied.
3. Nailed values are based on 3-1/2" spiral nails. For other sizes, multiply values by factor from nail schedule.
4. For nails at 8" oc, multiply resistance by 1.5. For nails at 6" oc multiply resistance by 2. For four rows of nails, double the two-row resistance.
5. For Details **A** and **B**, when attaching any two plies of 1-3/4" LVL together, half the nails may be driven from each face.
6. For Detail **A**, when nails shorter than 3-1/2" are used, drive half the nails from each face.
7. When driving nails from each face, alternate every other nail in a row.
8. For Details **C** and **E**, the larger side load should be applied to larger ply when possible.
9. For Detail **F**, it is permissible to nail plies together before bolting. Nail two plies together, then attach one additional ply to each side. Finally, bolt as shown.
10. 7" beams should not be loaded from one side only unless approved by a professional engineer.
11. Nail and bolt values for connectors into the face, loaded perpendicular-to-grain are based on an equivalent specific gravity of: SG=0.50
12. Other nail and bolt configurations are possible. Contact your LP Engineered Wood Products distributor or a professional engineer.

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LP I-Joists are manufactured to be straighter, stiffer and provide more consistent performance than solid sawn lumber joists. In essence, we've taken the tree apart and, with sophisticated engineering, put it back together to outperform traditional lumber products. LP I-Joists reduce the problems that occur as solid sawn lumber joists dry. They are less likely to shrink, split, twist, warp or crown resulting in high quality floors and ceilings that are solid, level and uniform. Pound for pound LP I-Joists have more load-carrying capacity than solid-sawn lumber, so floors and ceilings can be designed with fewer pieces, saving installation and material costs.

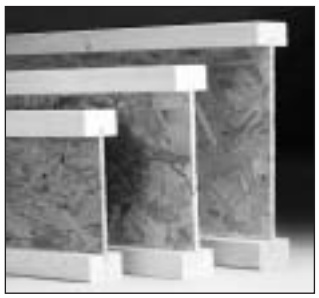
LP I-Joist Series: Engineered for Strength

LP offers a wide range of I-joists to work for virtually every residential and light commercial building application. All LP I-Joists feature strong, stable oriented strand board (OSB) webs. The flanges of the LPI 36 and 56 series are made with strong, one-piece LP LVL. The LPI 20Plus, 32Plus and 42Plus series are made with kiln-dried, finger-jointed solid sawn lumber flanges. To ensure strength and consistency, all LP I-Joists are manufactured with strict quality control standards, performance testing and the assurance of a third party inspection agency.

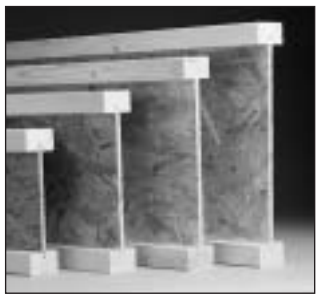
A Smart Choice for the Future

The OSB webs in LP I-Joists are engineered primarily from trees that are too small to be cut into dimensional lumber. So when you use LP I-Joists instead of dimensional sawn lumber, you're helping to reduce our country's dependence on large dimensional lumber. Like all of LP's Engineered Wood Products, LP I-Joists make sensible, efficient use of our precious forest resources.

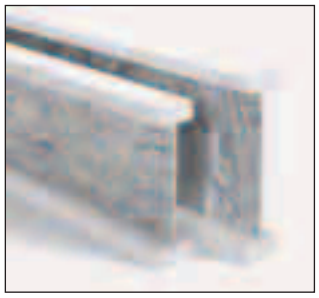
SOLID LUMBER FLANGED JOISTS



LPI 20Plus series (2-1/2" flange width):
9-1/2", 11-7/8", 14"



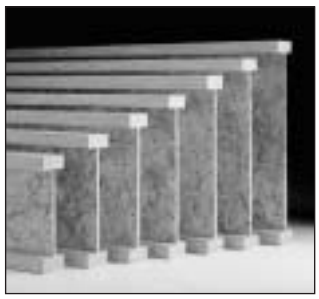
LPI 32Plus series (2-1/2" flange width):
9-1/2", 11-7/8", 14", 16"



LPI 42Plus series (3-1/2" flange width):
9-1/2", 11-7/8", 14", 16"*

LP LVL FLANGED JOISTS

LPI 36 series (2-1/4" flange width):
11-7/8", 14", 16"*



LPI 56 series (3-1/2" flange width):
11-7/8", 14", 16"*

* Depths up to 24" may be available.

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LP Rim Board

A perfect companion to LP I-Joists, LP Rim Board is available in both OSB and LVL and offers an easy, reliable way to finish off floor and roof installations. It eliminates the inaccuracies and time involved in on-site ripping of plywood rim. Matching depths of 9-1/2", 11-7/8", 14" and 16" are available for quick, convenient installation. The OSB rim is available in thicknesses of 1" and 1-1/8" and lengths of 12' and 16'. The LVL rim is available in 1-1/4" thickness with lengths up to 48'. Check with your LP Engineered Wood Products distributor for available lengths.

The LP Floor System

LP manufactures three types of engineered TopNotch® tongue-and-groove flooring, another perfect companion to LP I-Joists. The patented design of TopNotch T&G flooring features vertical notches in the tongue profile and panel ends, which allow rainwater to drain quickly from the surface of the flooring panel during construction. This means TopNotch T&G flooring is less subject to weather-related construction problems like expansion, contraction, swelling, buckling, warping and delamination. Perhaps best of all, when TopNotch T&G flooring is used with LP I-Joists, the floor system comes with a limited lifetime warranty.

Limited Lifetime Warranty

Backed by one of the strongest warranties in the industry, LP LVL, LP I-Joists and LP Rim Board come with a transferable, limited lifetime warranty. When TopNotch T&G flooring is used with these products, it also comes with this LP limited lifetime warranty. While solid, straight floors and ceilings go a long way to convince prospective home buyers to upgrade to homes built with LP products, the limited lifetime warranty offers home buyers and home builders comforting assurance that makes the difference.

At Your Service

LP's Engineered Wood Products service team, including LP's distributor partners, are on call to answer questions and provide support with LP's design/specification software, a product that helps provide accurate designs for our engineered wood products. In addition, our service team will provide detailed installation instructions, technical product guides, code evaluation reports, material safety data sheets and original copies of the limited lifetime warranty.

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LP Structural Products

LP I-Joists, LP LVL, LP Rim Board & LP TopNotch® T&G Flooring Products

Limited Lifetime Warranty

1. Warranty Coverage

This warranty applies to the original purchaser ("Purchaser") of LP I-Joists, LP LVL and LP Rim Board (the "Products") and to any owner of a building in which the Products are originally installed ("Owner"). LP warrants that the Products will, at the time of delivery, meet or exceed LP manufacturing standards and when installed in accordance with LP current published specifications will, for the life of the structure, (a) perform as reasonably required of I-Joists, laminated veneer lumber and rim board, and (b) exhibit no defects which are defined as delaminations or glue failures.

LP further warrants that its LP TopNotch® tongue-and-groove flooring products, when used in a flooring system application with LP I-Joists and/or LP LVL and LP Rim Board, is free from defects in materials and workmanship when installed and finished according to LP published installation instructions, and will perform in accordance with LP current published specifications for the lifetime of the structure. IN THE EVENT THE PRODUCTS DO NOT COMPLY WITH THIS WARRANTY, THE LIABILITY OF LP IS LIMITED TO THE REPAIR AND REPLACEMENT, OR PAYMENT PROVISIONS SET FORTH IN PARAGRAPH 4 BELOW.

Delamination is defined as a visible separation which results in the reduction of structural strength within the I-Joist web or the laminated veneer lumber or the rim board. Glue failure is defined as visible separation of glued joints which results in reduction of structural strength within the web to web section joints or flange to web joints in I-Joists. Minor surface characteristics such as loose or folded surface flakes or minor edge swelling in OSB rim board or I-Joist webs and minor surface checking in laminated veneer lumber or I-Joist flanges and minor swelling or cupping in laminated veneer lumber do not qualify as defects.

2. Exclusions from Warranty Coverage

THIS EXPRESS WARRANTY PROVIDES A REMEDY ONLY FOR NON-CONFORMITIES REPORTED IN ACCORDANCE WITH PARAGRAPH 6(a) BELOW.

IN ADDITION, THIS WARRANTY DOES NOT PROVIDE A REMEDY FOR:

a. NON-CONFORMITIES CAUSED BY: (1) MISUSE OR IMPROPER HANDLING, INSTALLATION OR MAINTENANCE; (2) ALTERATIONS TO THE STRUCTURE AFTER THE ORIGINAL INSTALLATION OF THE PRODUCTS; (3) ACTS OF GOD, SUCH AS EARTHQUAKE, TORNADO, FLOOD OR OTHER SIMILAR SEVERE WEATHER OR SIMILAR NATURAL PHENOMENA; (4) TRANSPORT, STORAGE OR HANDLING OF THE PRODUCTS PRIOR TO INSTALLATION.

b. PRODUCTS THAT ARE NOT INSTALLED IN COMPLIANCE WITH ALL APPLICABLE BUILDING CODES AND INSTALLED AND MAINTAINED ACCORDING TO LP PRINTED INSTALLATION AND MAINTENANCE INSTRUCTIONS; OR

c. WORKMANSHIP OF THE INSTALLATION OF THE PRODUCTS.

3. Exclusion of Implied Warranties; No Other Express Warranties

THIS WARRANTY IS THE ONLY WARRANTY APPLICABLE TO THESE PRODUCTS AND EXCLUDES ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING ANY **IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE,** OR ANY WARRANTIES OTHERWISE ARISING FROM A COURSE OF DEALING OR A USAGE OF TRADE OR ADVERTISING, EXCEPT WHERE SUCH WARRANTIES ARISE UNDER APPLICABLE CONSUMER PRODUCT WARRANTY LAWS AND CANNOT LAWFULLY BE DISCLAIMED, IN WHICH EVENT SUCH WARRANTIES ARE LIMITED TO THE SHORTEST PERIOD PERMITTED OR REQUIRED UNDER APPLICABLE LAW.

Some states or provinces may not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

NO OTHER WARRANTY HAS BEEN MADE OR WILL BE MADE ON BEHALF OF LP WITH RESPECT TO THESE PRODUCTS.

4. Remedies

THIS SECTION PROVIDES FOR THE SOLE REMEDY AVAILABLE TO THE OWNER FROM LP FOR ANY NONCONFORMITY IN THE PRODUCTS. In the event of any nonconformity covered by this, or any implied warranty, LP at its option will repair or replace the nonconforming Products including the cost of labor which will be based upon labor estimates established by an independent, nationally-recognized construction cost estimator or construction cost estimating publication.

5. Exclusion of Other Remedies

IN NO EVENT WILL LP BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECT IN THE PRODUCTS SUPPLIED INCLUDING, BUT NOT LIMITED TO, DAMAGE TO PROPERTY OR LOST PROFITS.

Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

6. Responsibility of Owner

a. Any Owner seeking remedies under this warranty must notify LP in writing within 30 days after discovering a possible non-conformity of the Products, and before beginning any permanent repair. This written notice should include the date the Products were installed, and if known, the mill identity number imprinted on the Products.

b. It is the Owner's responsibility to establish the date of installation. The Owner should do this by retaining any records which would tend to prove when the product was installed including, but not limited to: purchase invoices and receipts, contractor's billings, service contracts and building permits.

c. Upon reasonable notice, the Owner must allow LP agents to enter the property and building on which the Products are installed to inspect such Products.

This warranty gives you specific legal rights, and you may also have other rights which vary in each state or province.

FOR FURTHER INFORMATION, CONTACT:

888.820.0325

Visit our Web site at www.lpcorp.com.

LP® BUILDING PRODUCTS

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Specifications (details) subject to change without notice. PT 15M

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For a copy of the LP Structural Products Limited Lifetime Warranty, call 1.888.820.0325 or visit our web site at www.lpcorp.com.

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LP Structural Products

LP I-Joists, LP LVL, LP Rim Board & LP TopNotch® T&G Flooring Products

Limited Lifetime Warranty

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b. PRODUCTS THAT ARE NOT INSTALLED IN COMPLIANCE WITH ALL APPLICABLE BUILDING CODES AND INSTALLED AND MAINTAINED ACCORDING TO LP PRINTED INSTALLATION AND MAINTENANCE INSTRUCTIONS; OR

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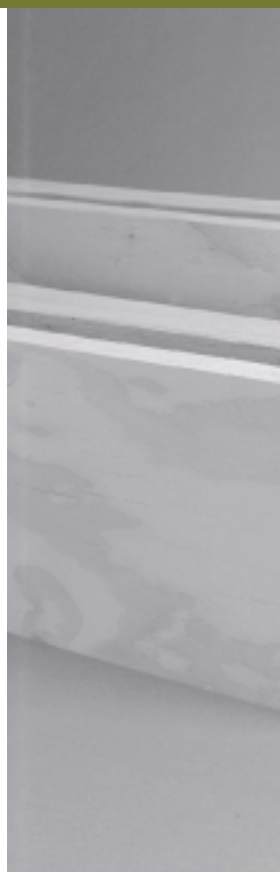

LP Engineered Wood Products are manufactured at different locations in the United States and Canada. Please verify availability with the LP Engineered Wood Products distributor in your area before specifying these products.

For more information on the full line of LP Engineered Wood Products, including our warranty, or the nearest distributor, please contact **1.888.820.0325** or e-mail **customer.support@lpcorp.com**.
Visit our Web site at **www.lpcorp.com**.

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